ORDER NO.VMD0002006C8

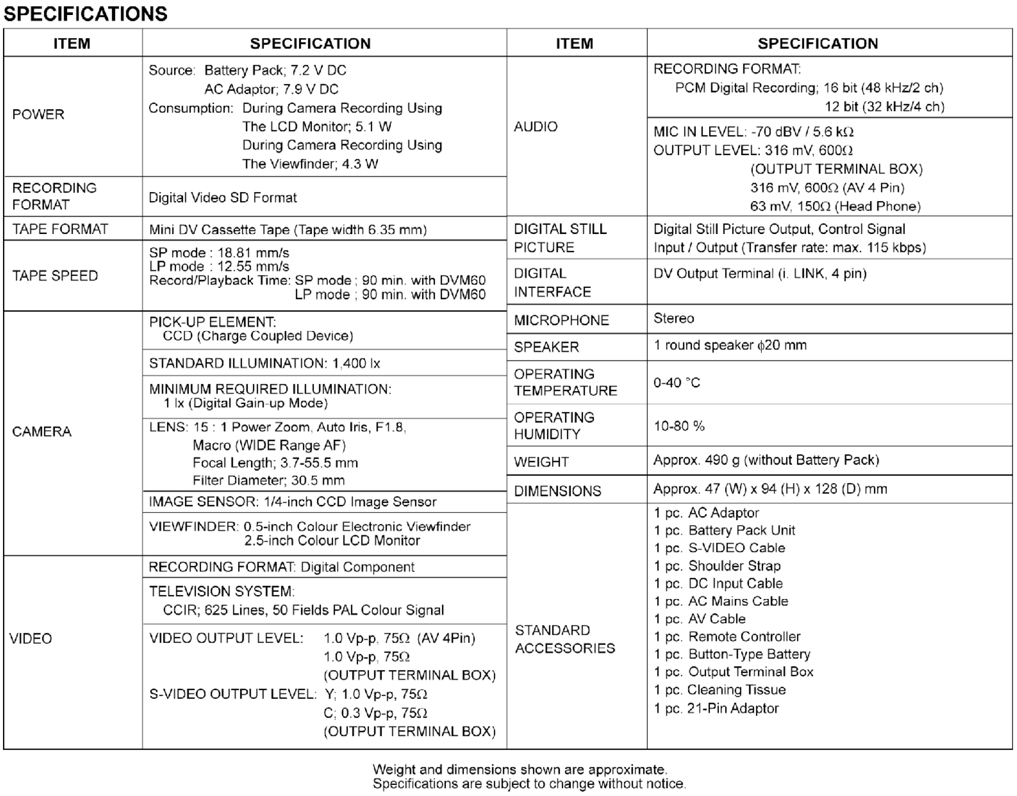
Service Manual

Digital Video Camera/Recorder

NV-DS35EG / NV-DS35B / NV-DS35EN / NV-DS35A

Q3-MECHANISM

SPECIFICATIONS



SPECIFICATIONS

ITEM	SPECIFICATION
POWER	Source: Battery Pack; 7.2 V DC AC Adaptor; 7.9 V DC Consumption: During Camera Recording Using The LCD Monitor; 5.1 W During Camera Recording Using The Viewfinder; 4.3 W
RECORDING FORMAT	Digital Video SD Format
TAPE FORMAT	Mini DV Cassette Tape (Tape width 6.35 mm)
TAPE SPEED	SP mode : 18.81 mm/s LP mode : 12.55 mm/s Record/Playback Time: SP mode ; 90 min. with DVM60 LP mode ; 90 min. with DVM60
CAMERA	PICK-UP ELEMENT: CCD (Charge Coupled Device)
	STANDARD ILLUMINATION: 1,400 lx
	MINIMUM REQUIRED ILLUMINATION: 1 lx (Digital Gain-up Mode)
	LENS: 15 : 1 Power Zoom, Auto Iris, F1.8, Macro (WIDE Range AF) Focal Length; 3.7-55.5 mm Filter Diameter; 30.5 mm
	IMAGE SENSOR: 1/4-inch CCD Image Sensor
	VIEWFINDER: 0.5-inch Colour Electronic Viewfinder 2.5-inch Colour LCD Monitor
VIDEO	RECORDING FORMAT: Digital Component
	TELEVISION SYSTEM: CCIR; 625 Lines, 50 Fields PAL Colour Signal
	VIDEO OUTPUT LEVEL: 1.0 Vp-p, 75Ω (AV 4Pin) 1.0 Vp-p, 75Ω (OUTPUT TERMINAL BOX) S-VIDEO OUTPUT LEVEL: Y; 1.0 Vp-p, 75Ω C; 0.3 Vp-p, 75Ω (OUTPUT TERMINAL BOX)

ITEM	SPECIFICATION
AUDIO	RECORDING FORMAT: PCM Digital Recording; 16 bit (48 kHz/2 ch) 12 bit (32 kHz/4 ch)
	MIC IN LEVEL: -70 dBV / 5.6 kΩ OUTPUT LEVEL: 316 mV, 600Ω (OUTPUT TERMINAL BOX) 316 mV, 600Ω (AV 4 Pin) 63 mV, 150Ω (Head Phone)
DIGITAL STILL PICTURE	Digital Still Picture Output, Control Signal Input / Output (Transfer rate: max. 115 kbps)
DIGITAL INTERFACE	DV Output Terminal (i. LINK, 4 pin)
MICROPHONE	Stereo
SPEAKER	1 round speaker φ20 mm
OPERATING TEMPERATURE	0-40 °C
OPERATING HUMIDITY	10-80 %
WEIGHT	Approx. 490 g (without Battery Pack)
DIMENSIONS	Approx. 47 (W) x 94 (H) x 128 (D) mm
STANDARD ACCESSORIES	1 pc. AC Adaptor 1 pc. Battery Pack Unit 1 pc. S-VIDEO Cable 1 pc. Shoulder Strap 1 pc. DC Input Cable 1 pc. AC Mains Cable 1 pc. AV Cable 1 pc. Remote Controller 1 pc. Button-Type Battery 1 pc. Output Terminal Box 1 pc. Cleaning Tissue 1 pc. 21-Pin Adaptor

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

1. INTRODUCTION

1.1. INTRODUCTION1

This service manual contains technical information which will allow service personnel's to understand and service this model.Please place orders using the parts list and not the drawing reference numbers.
If the circuit is changed or modified, this information will be followed by supplement service manual to be filed with original service manual.

Note 1:
These movie camera uses AC Adaptor is VSK0565.
The service manual for AC Adaptor is separate volume.
Order number for AC Adaptor-----VSK0565 : VMD9908033C8

Note 2:
This service manual does not contain the following information, because of the impossibility of sevicing at component level.

1. Schematic Diagram, Block Diagram and C.B.A. of Main C.B.A.

2. Parts List for individual parts of Main C.B.A.

3. Exploded View and Parts List for individual parts of Mecha. Unit

When a part replacement is required for repairing Main C.B.A. and/or Mecha. Unit, replace the assembly parts.
The following circuits are contained in Main C.B.A.

1. Main Connection Circuit

2. Camera Circuit

3. Video 1 Circuit

4. Video 2 Circuit

5. Video 3 Circuit

6. Control Circuit

7. Lens Drive Circuit

8. **Digital Interface Circuit**
9. **LCD Circuit**

2. CAUTION FOR AC CORD (VJA0940 TYPE)

2.1. INFORMATION FOR YOUR SAFETY

IMPORTANT
Your attention is drawn to the fact that recording of pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

WARNING

To reduce the risk of fire or shock hazard, do not expose this equipment to rain or moisture.

CAUTION

To reduce the risk of fire or shock hazard and annoying interference, use the recommended accessories only.

FOR YOUR SAFETY
DO NOT REMOVE THE OUTER COVER
To prevent electric shock, do not remove the cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

2.2. CAUTION FOR AC MAINS LEAD

For your safety, please read the following text carefully.
This appliance is supplied with a moulded three-pin mains plug for your safety and convenience.
A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amperes and it is approved by ASTA or BSI to BS1362
Check for the ASRA mark or the BSI mark on the body of the fuse.

ASTA mark ASA	BSI mark

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover, the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local Panasonic Dealer.
If the fitted moulded plug is unsuitable for the socket outlet in your home then the fuse should be removed and the plug cut off and disposed of safety.
There is a danger of severe electrical shock if the cut off plug is inserted into any 13-ampere socket.
If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt, please consult a qualified electrician.

2.2.1. Important

The wires in this mains lead are coloured in accordance with the following code:

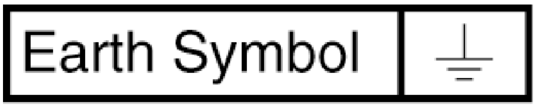
Blue	**Neutral**
Brown	**Live**

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

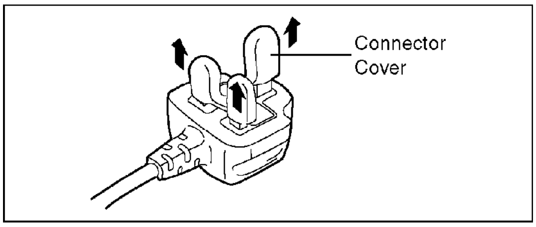
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol.



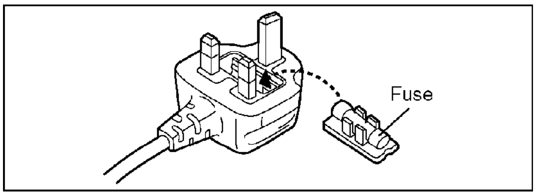
2.2.2. Before use

remove the Connector Cover as follows.

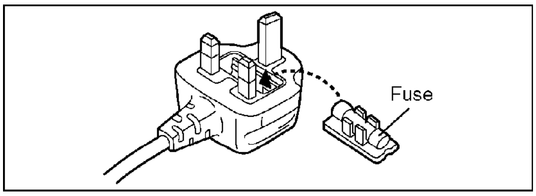


2.2.3. How to replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



2. Replace the fuse and attach the Fuse cover.



3. COMPARISON CHART

Comparison Chart for NV-DS55 & NV-DS35

This Chart described different part from the original model to new model as shown below.

Original Model : NV-DS55(VMD0001002C8)

New Model : NV-DS35 (This model does not have MMC recording function for still image)

Note : IMPORTANT NOTICE
Components identified with ⚠ have special characterristics for safty.
When replacing any these components, use only the same parts.

3.1. COMPARISON CHART : NV-DS55& NV-DS35

3.1.1. Comparison chart of Mechanical replacement Parts.<A>...Added,<C>...Changed,<D>...Deleted.

Ref. No.	Parts No. for NV-DS55	Parts No. for NV-DS35	Pcs/ Set	Parts name & description	Ren
34 (1)	VYK9336	VYK9488	1	TOP PANEL U.	
50 (1)	VGQ5474	-----------------	1-0	MMC COVER LOCK PIECE	
54 (1)	VKF3187	-----------------	1-0	MMC COVER	
57 (1)	VMB3367	-----------------	1-0	MMC COVER SPRING	
58 (1)	VMS6609	-----------------	1-0	MMC COVER SHAFT	
59 (1)	VXA6417	VXA6720	1	LCD LOCK U.	
61 (1)	VYK934	VYK9486	1	R BASE (1) U.	
63 (1)	VYK9425	VYK9478	1	BATTERY DUMMY CASE U.	
B20 (1)	XQN16+A4FN	-----------------	1-0	SCREW	
B21 (1)	XQN16+BJ4		1-2	SCREW	
120 (2)	VGL0849		3-2	PROTECT SHEET	
124 (2)	VGU8256	-----------------	1-0	FULLAUTO KNOB	
125 (2)	VKM5350	VKM5405	1	GRIP PIECE	
211 (2)	VYK9341	VYK9484	1	LCD CASE U. (UPPER)	
402 (5)	-----------------	VQT8687	0-1	OPERATING INSTRUCTIONS / (FRENCH/SPANISH)	NV-DS35E
	-----------------	VQT8688	0-1	OPERATING INSTRUCTIONS / (ITALIAN/DUTCH)	NV-DS35E
	-----------------	VQT8689	0-1	OPERATING INSTRUCTIONS / (GERMAN/ENGLISH)	NV-DS35E
	-----------------	VQT8690	0-1	OPERATING INSTRUCTIONS / (SWEDISH/DANISH)	NV-DS35E
	-----------------	VQT8691	0-1	OPERATING INSTRUCTIONS / (ENGLISH)	NV-DS35E
	-----------------	VQT8692	0-1	OPERATING INSTRUCTIONS / (ENGLISH/CHINESE)	NV-DS35E
	-----------------	VQT8693	0-1	OPERATING INSTRUCTIONS / (RUSSIAN/ARABIC)	NV-DS35E
	-----------------	VQT8694	0-1	OPERATING INSTRUCTIONS / (ENGLISH)	NV-DS35A
406 (5)	VFA0306	-----------------	1-0	MULTI MEDIA CARD	
415 (5)	VPK2320	VPK2333	1	PACKING	NV-DS35E
415 (5)	VPK2321	VPK2334	1	PACKING	NV-DS35E

Ref. No.	Parts No. for NV-DS55	Parts No. for NV-DS35	Pcs/ Set	Parts name & description	Ren
415 (5)	VPK2322	VPK2335	1	PACKING	NV-DS35E
415 (5)	VPK2323	VPK2336	1	PACKING	NV-DS35A
427 (5)	-----------------	VFA0151	0-1	21-PIN ADAPTOR	

3.1.2. Comparison chart of Electrical replacement Parts.<A>...Added,<C>...Changed,<D>...Deleted.

Ref. No.	Parts No. for NV-DS55	Parts No. for NV-DS35	Pcs/ Set	Parts name & description	Ren
	VEP03F07B	VEP03F07E	1	VTR MAIN C.B.A	NV-DS35E
	VEP03F07C	VEP03F07F	1	VTR MAIN C.B.A	NV-DS35E
	VEP01849B	VEP01849C	1	POWER C.B.A	
	VEP000D0A	VEP000D0B	1	MMC/AV JACK C.B.A	
	VEP006D07A	VEP06D07B	1	S/S POWER FLEX CARD C.B.A	

4. SERVICE CAUTION

4.1. EEPROM DATA FOR SPARE PARTS OF THE MAIN C.B.A.

When the Main C.B.A. is replaced, the fixed and average data must be changed by Tatsujin kit according to the Movie Camera’s suffix.
Then, confirm and/or adjust the VTR and Camera adjustment one by one.

4.2. SERVICE EXTENSION CABLES.

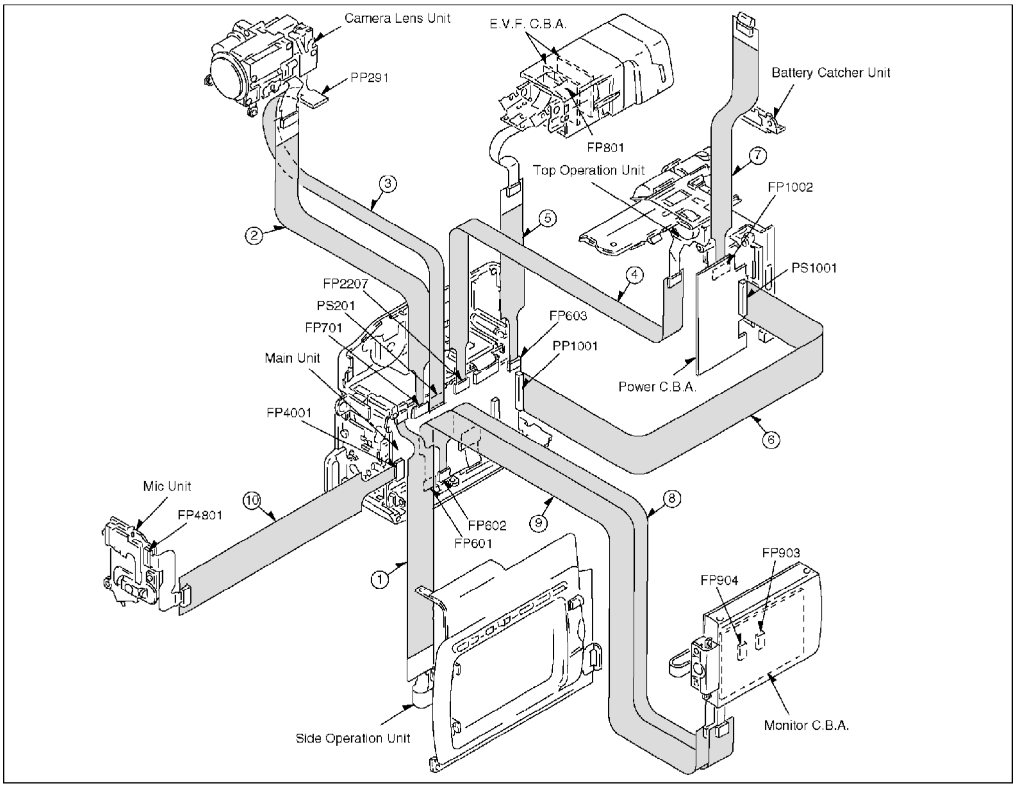
This models is required the following extension cables for all connections.

Note 1:
Use the following extension cables when checking or adjusting individual circuit boards except module Parts. (Main C.B.A. and Mecha. Unit)

Ref.	Part No.	Pin	Part Name	Connection	Q'ty	Ren
(1)	VFK1440	10	Flat Cable	FP2206 (Main)-Side Operation Unit	1	As NV-D
(2)	VFK1491	27	Flat Cable	FP701 (Main)-Lens Unit	1	As NV-D
(3)	VFK1460	20	Flat Cable	PS201 (Main)-PP291 (CCD)	1	As NV-E
(4)	VFK1442	21	Flat Cable	FP2207 (Main)-Top Operation Unit	1	As NV-D
(5)	VFK1442	21	Flat Cable	FP603 (Main)-FP801 (E.V.F.)	1	As NV-D
(6)	VFK1463	90	Flat Cable	PP1001 (Main)-PS1001 (Power)	1	As NV-E
(7)	VFK1173	14	Flat Cable	FP1002 (Power)-Battery Catcher	1	As NV-D
(8)	VFK1452	17	Flat Cable	FP602 (Main)-FP904 (Monitor)	1	As NV-D
(9)	VFK1442	21	Flat Cable	FP601 (Main)-FP903 (Monitor)	1	As NV-D
(10)	VFK1491	29	Flat Cable	FP4001 (Main)-FP4801 (Mic Unit)	1	As NV-D

How to use extension cables.

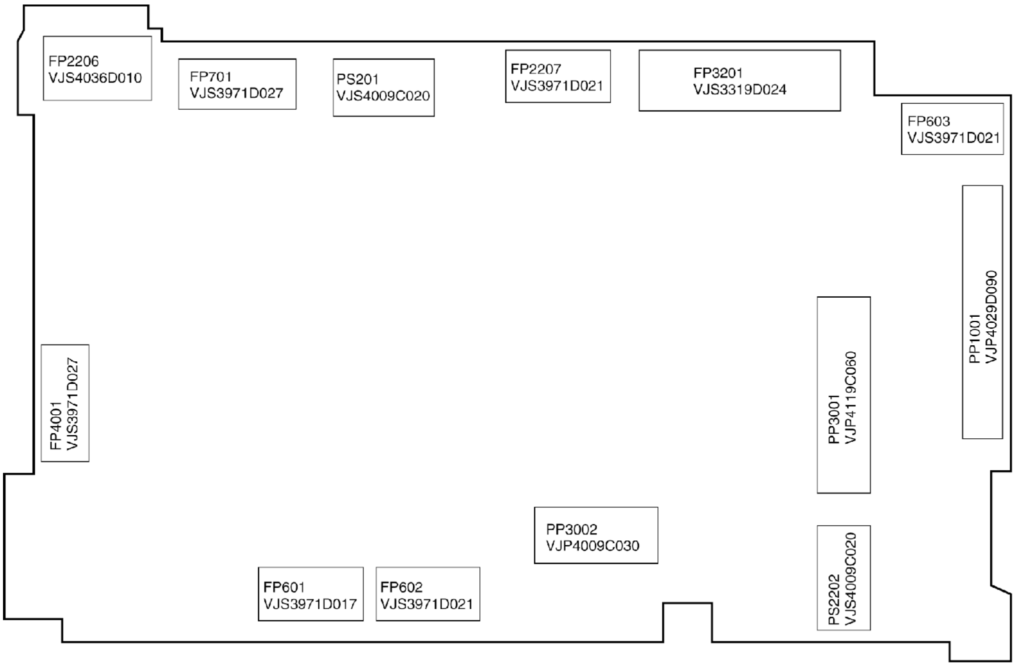
Fig. T1



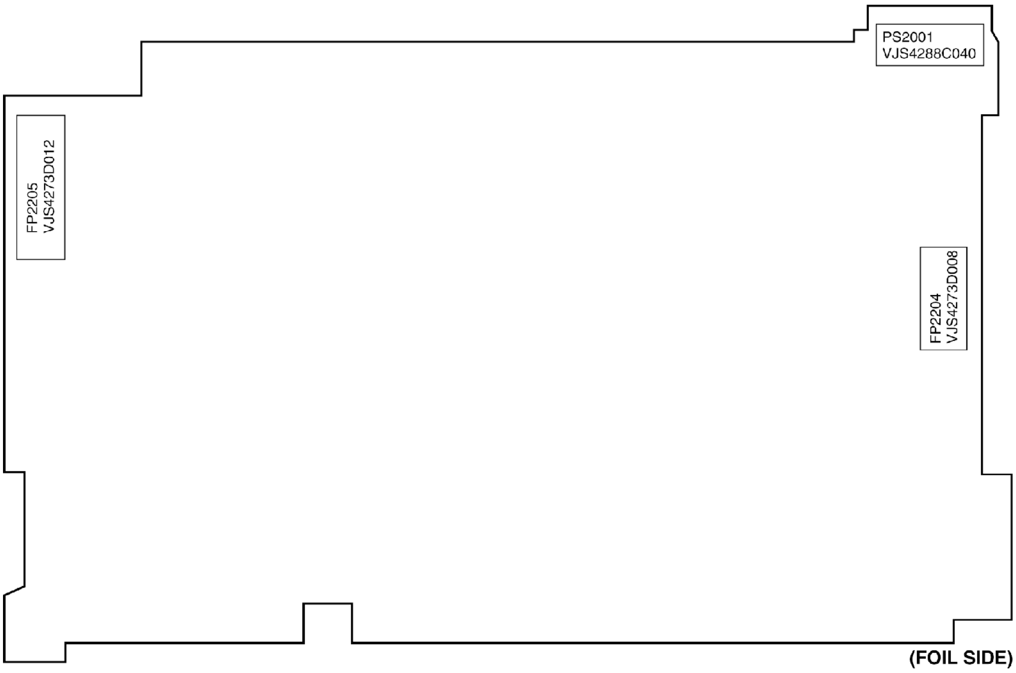
Camera Lens Unit
E.V.F. C.B.A.
PP291
Battery Catcher Unit
FP801
Top Operation Unit
⑦
FP1002
③
⑤
②
④
PS1001
FP2207
PS201
FP701
FP603
Main Unit
PP1001
Power C.B.A.
FP4001
⑥
Mic Unit
⑩
⑧
FP4801
FP602
⑨
FP601
FP903
①
FP904
Monitor C.B.A.
Side Operation Unit

4.3. LOCATION FOR SPARE CONNECTORS OF THE MAIN C.B.A.

Fig. T2


FP2206
VJS4036D010
FP701
VJS3971D027
PS201
VJS4009C020
FP2207
VJS3971D021
FP3201
VJS3319D024
FP603
VJS3971D021
PP1001
VJP4029D090
PP3001
VJP4119C060
FP4001
VJS3971D027
PP3002
VJP4009C030
FP601
VJS3971D017
FP602
VJS3971D021
PS2202
VJS4009C020

(COMPONENT SIDE)


PS2001
VJS4288C040
FP2205
VJS4273D012
FP2204
VJS4273D008

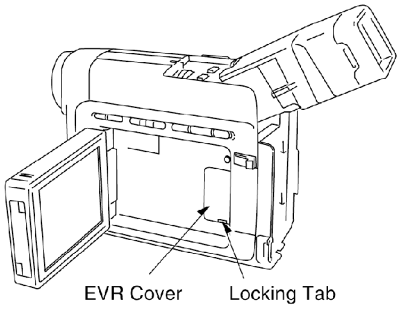
(FOIL SIDE)

5. PREPARATION FOR ELECTRICAL ADJUSTMENT

5.1. SERVICE POSITION

1. Remove the EVR Cover which is located on the Side Case Unit as follows.
2. Then connect the following cables as shown in Fig. E2.

Fig. E1


EVR Cover
Locking Tab

Part No.	Part Name	Q’ty	Remarks
VFK1395	**232C I/F Cable**	**1**	
VFK1308E	**Measuring Board**	**1**	
VFK1309	**EVR Connector Board**	**1**	
VFK1317	**30 Pin Flat Cable**	**2**	
VJA0941	**DC Output Cable**	**1**	**For AC Adaptor**
VFK1164TAR3A	**Setup Ring (ϕ 30.5 mm)**	**1**	**For Collimator**

Fig. E2

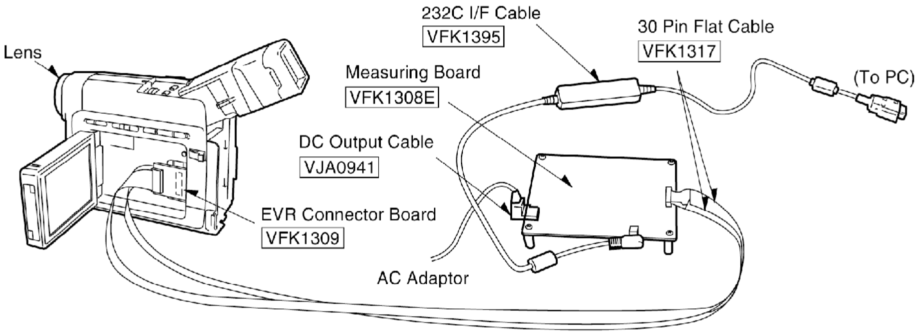
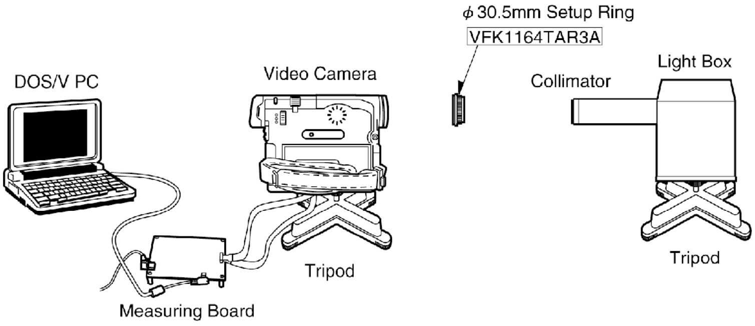

Lens
232C I/F Cable
VFK1395
30 Pin Flat Cable
VFK1317
Measuring Board
VFK1308E
(To PC)
DC Output Cable
VJA0941
EVR Connector Board
VFK1309
AC Adaptor

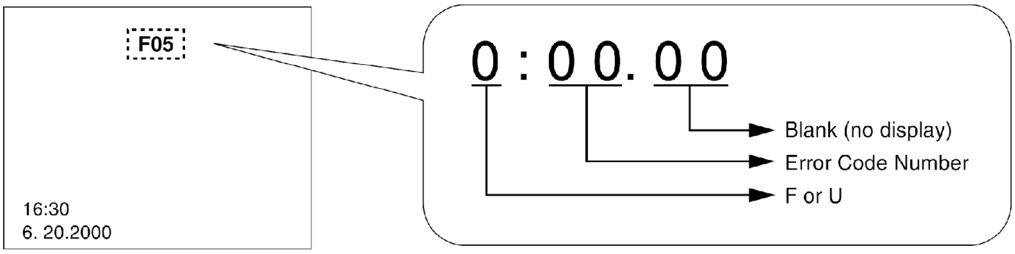
Fig. E3


ϕ 30.5mm Setup Ring
VFK1164TAR3A
DOS/V PC
Video Camera
Collimator
Light Box
Tripod
Tripod
Measuring Board

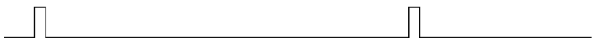
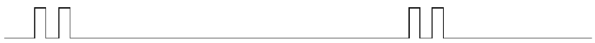
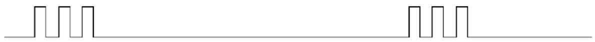
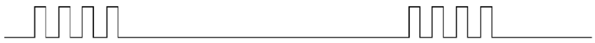
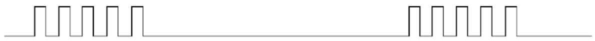
5.2. HP LIGHT BOX

6. SERVICE MODE

When undesirable conditions occurred, the error code is displayed on the EVF or LCD Monitor. Also, the Camera LED is flashed according to the error code as follows.



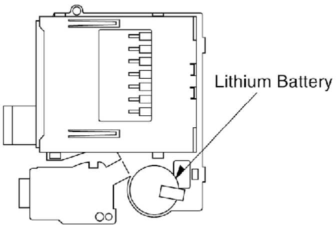
EVF or LCD Monitor

DISPLAY	CONDITION	POWER OFF TIMING / POWER LED FLASHING TIMING
F01	T-Reel Lock	After 1 minute flashing the LED 
F02	S-Reel Lock	After 1 minute flashing the LED 
F03	Unloading Lock	After 1 minute flashing the LED 
F04	Loading Lock	After 1 minute flashing the LED 
F05	Cylinder Lock	After 1 minute flashing the LED 
F31	Data Transmission Error	Not turning OFF
F51	Focus Motor Lock	Not turnig OFF Power LED is flashed at 1 Hz timing
F52	Zoom Motor Lock	Not turnig OFF Power LED is flashed at 1 Hz timing
F53	OIS Lock 1 (Sensor)	Not turning OFF
F54	OIS Lock 2 (Actuator)	Not turning OFF
U10	Dew Detection	After 18 seconds flashing the LED Power LED is flashed at 1 Hz timing
U11	Head Clogging	Not turning OFF

7. HOW TO REPLACE THE LITHIUM BATTERY (PROCEDURE)

1. **Remove the MMC/AV JACK C.B.A. from Rear Case Unit. (Refer to Disassembly Procedures.)**
2. **Remove the Lithium Battery “VSB0407” and then replace the new one. (See Fig. B1.)**

Fig. B1



Note:
The lithium battery is a critical component. (Type No.:VSB0407Manufactured by Panasonic.)
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in equipment designed specifically for its use.
Replacement batteries must be of the same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the old battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's instructions.

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering.
Udskiftning má kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

8. GENERAL DESCRIPTIONS

9. ADJUSTMENT PROCEDURES

9.1. DISASSEMBLE FLOW CHART

This flow chart indicates the disassembly steps the cabinet parts, C.B.A. and Mecha. Unit in order to access to be serviced. When reinstalling, perform the steps in the reverse order.

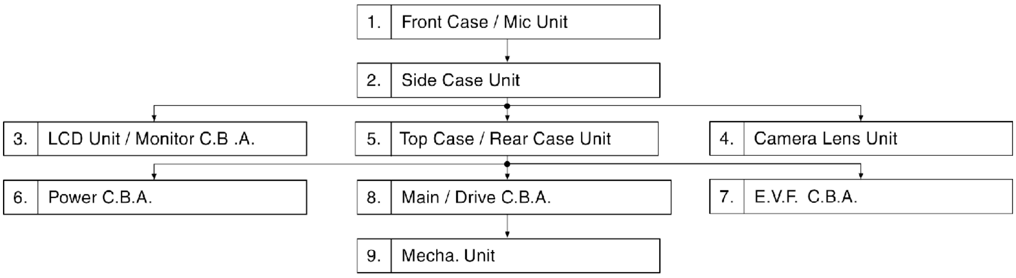
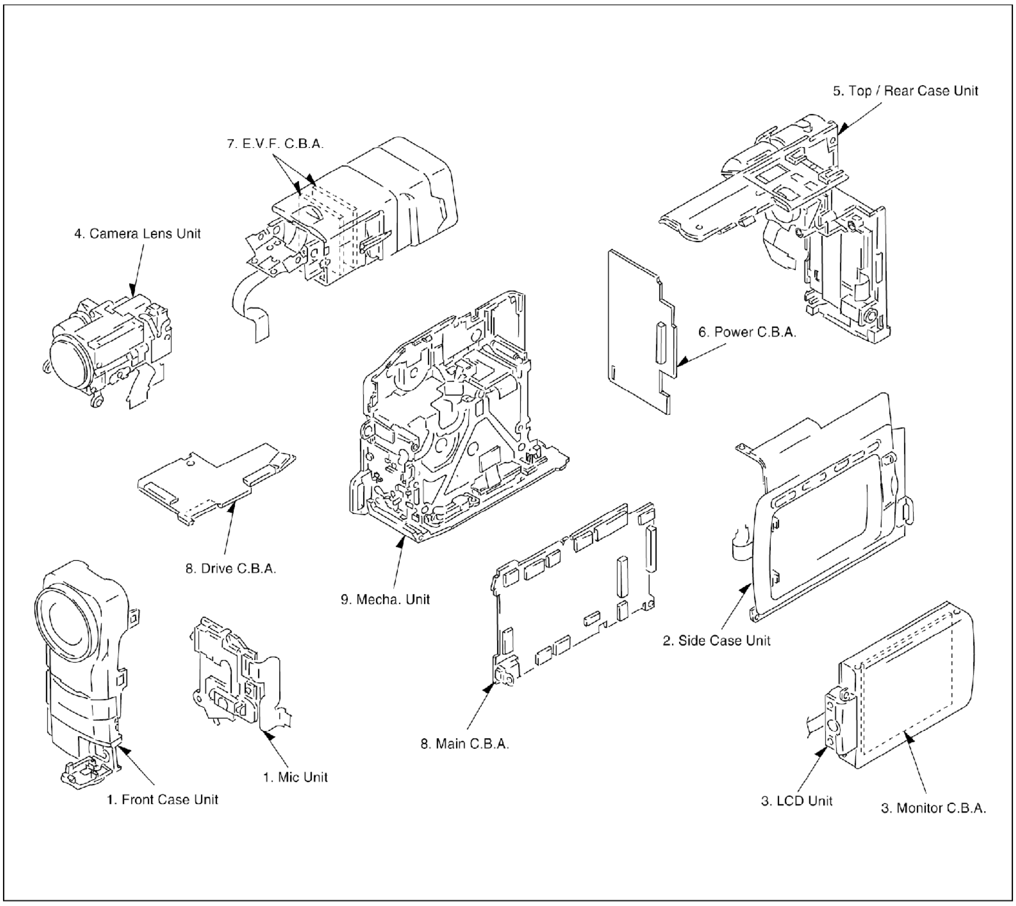

1. Front Case / Mic Unit
2. Side Case Unit
3. LCD Unit / Monitor C.B .A.
5. Top Case / Rear Case Unit
4. Camera Lens Unit
6. Power C.B.A.
8. Main / Drive C.B.A.
7. E.V.F. C.B.A.
9. Mecha. Unit

Fig. 1


5. Top / Rear Case Unit
7. E.V.F. C.B.A.
4. Camera Lens Unit
6. Power C.B.A.
8. Drive C.B.A.
9. Mecha. Unit
2. Side Case Unit
8. Main C.B.A.
1. Mic Unit
1. Front Case Unit
3. LCD Unit
3. Monitor C.B.A.

9.2. DISASSEMBLY PROCEDURES

Flow-Chart for Disassembly Procedure

No.	Item/Part	Fig.	Removal (Screw & Other)
1.	**Front Case Unit & Mic Unit**	**Fig. 1**	**4-Screws (A/B)** **Remove the Front Case Unit.** **1-Screw (C)** **Disconnect FP4801/P4201.** **Remove the Mic Unit.**
2.	**Side Case Unit**	**Fig. 2**	**7-Screws (D/E/F)** **Unlock (a)** **Disconnect FP601/FP602/ FP2206.** **Remove the Side Case Unit.**

No.	Item/Part	Fig.	Removal (Screw & Other)
3.	LCD Unit/ Monitor C.B.A.	Fig. 3-1	2-Screws (G) Unlock (b) Remove the LCD Hinge Cover. 2-Screws (H) Remove the LCD Hinge Cover.
		Fig. 3-2	4-Screws (I) Unlocks (c) Remove the LCD Case (Upper) Unit. 1-Screw (J) Un-solder------2 Point Disconnect the following connectors. FP901/FP903/FP904/FP905. Removethe Monitor C.B.A. Remove the Hall Sensor Flex. Card.
4.	Camera Lens Unit	Fig. 4	2-Screws (K) Disconnect FP701/PS201. Remove the Camera Lens Unit.
5.	Top/Rear Case Unit	Fig. 4	6-Screws (L/M/N/O/P) Disconnect the following connectors. FP603/FP2207/PP1001 Unlock (d) Remove the Top/Rear Case Unit.
6.	Power C.B.A.	Fig. 5	Disconnect the FP1001. Unlocks (e/f) Remove the Power C.B.A./ Battery Catcher Unit from Top/Rear Case Unit. Disconnect the FP1002. Remove the Battery CatcherUnit.

No.	Item/Part	Fig.	Removal (Screw & Other)
7.	E.V.F. C.B.A.	Fig. 6	2-Screws (Q) Remove the EVF Unit from Top/Rear Case Unit. Remove the Window Cover. Remove the EVF Slide Case.
		Fig. 7	2-Screws (R) Remove the EVF Guide Piece. 2-Screws (S) Remove the EVF Hinge. Remove the EVF C.B.A.
8.	Main/Drive C.B.A.	Fig. 8	1-Screw (T) Disconnect the following connectors. FP2204/ FP2205/ FP3201/ PP3002/ PS2001/ FP2201/ FP2202/ FP2203. Unlocks ---(g/h) Removethe Main C.B.A. Remove the Drive C.B.A.
9	Mecha. Unit	Fig. 9	Open the Cassette Cover (S). Unlock the lock Level for Cover. Open the Cassette Cover (C).
		Fig. 10	4-Screws (U/V) Remove the Mecha. Frame. Remove the Mecha. Unit.

Fig. 1

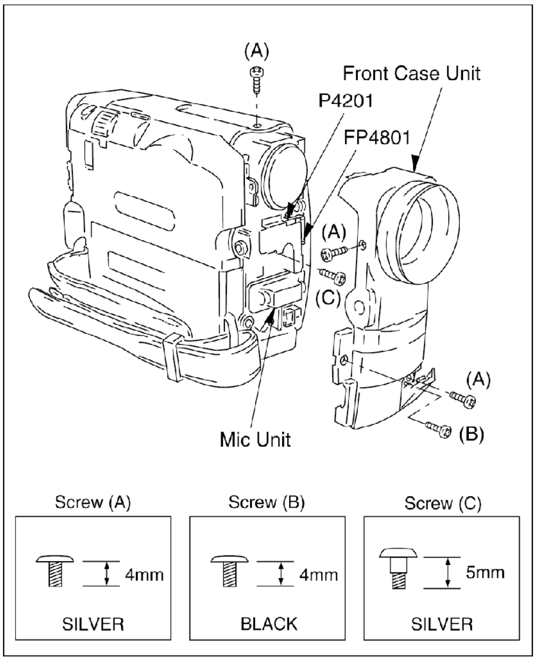

(A)
Front Case Unit
P4201
FP4801
(A)
(C)
(A)
(B)
Mic Unit
Screw (A)
4mm
SILVER
Screw (B)
4mm
BLACK
Screw (C)
5mm
SILVER

Fig. 2

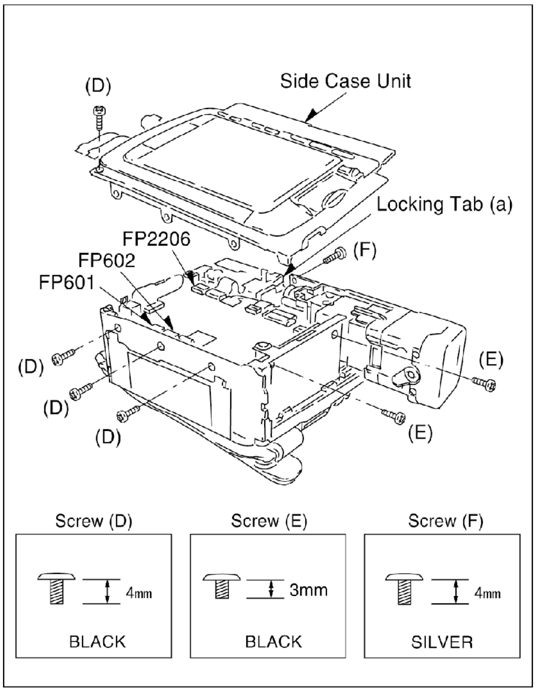

(D)
Side Case Unit
Locking Tab (a)
FP2206
FP602
FP601
(F)
(D)
(D)
(D)
(E)
(E)
Screw (D)
4mm
BLACK
Screw (E)
3mm
BLACK
Screw (F)
4mm
SILVER

Fig. 3-1

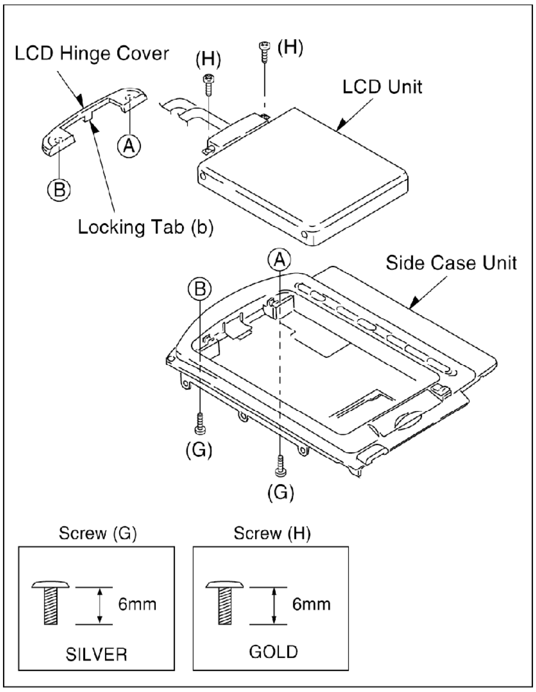

LCD Hinge Cover
(H)
(H)
LCD Unit
A
B
Locking Tab (b)
A
Side Case Unit
B
(G)
(G)
Screw (G)
6mm
SILVER
Screw (H)
6mm
GOLD

Fig. 3-2

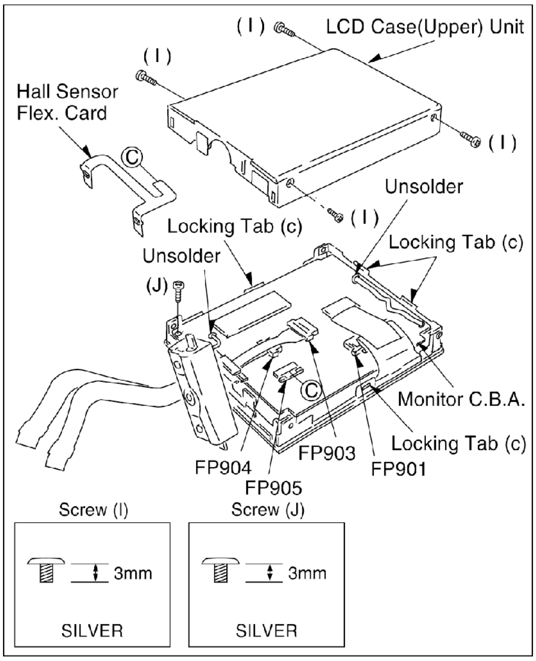

(I)
LCD Case(Upper) Unit
(I)
Hall Sensor
Flex. Card
C
(I)
Unsolder
(I)
Locking Tab (c)
Unsolder
Locking Tab (c)
(J)
C
Monitor C.B.A.
Locking Tab (c)
FP903
FP904
FP901
FP905
Screw (I)
3mm
SILVER
Screw (J)
3mm
SILVER

Fig. 4

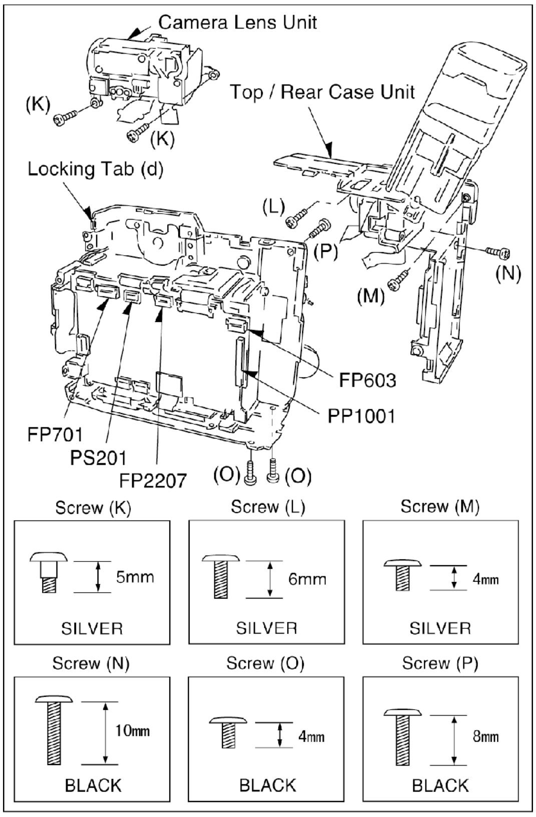

Camera Lens Unit
(K)
(K)
Top / Rear Case Unit
Locking Tab (d)
(L)
(P)
(N)
(M)
FP603
PP1001
FP701
PS201
FP2207
(O)
(O)
Screw (K)
5mm
SILVER
Screw (L)
6mm
SILVER
Screw (M)
4mm
SILVER
Screw (N)
10mm
BLACK
Screw (O)
4mm
BLACK
Screw (P)
8mm
BLACK

Fig. 5

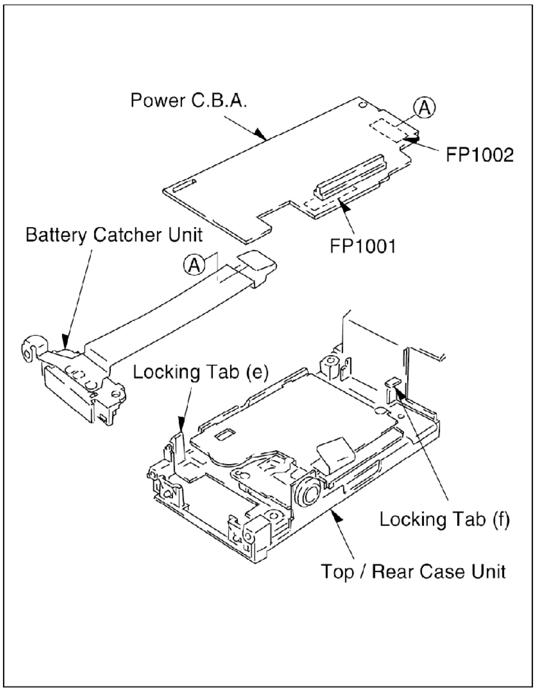

Power C.B.A.
Ⓐ
FP1002
FP1001
Battery Catcher Unit
Ⓐ
Locking Tab (e)
Locking Tab (f)
Top / Rear Case Unit

Fig. 6

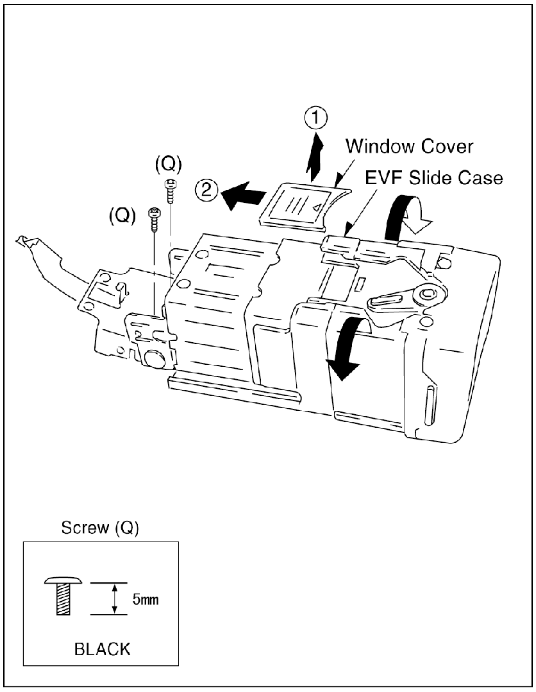

①
Window Cover
EVF Slide Case
(Q)
②
(Q)
Screw (Q)
5mm
BLACK

Fig. 7

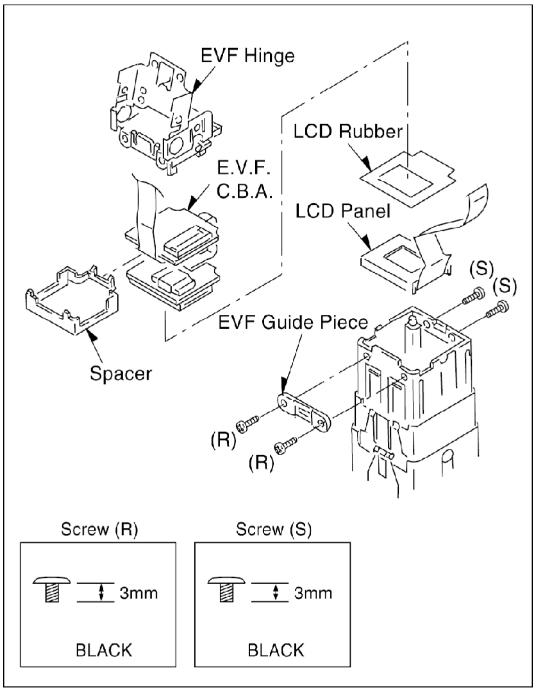

EVF Hinge
LCD Rubber
E.V.F.
C.B.A.
LCD Panel
(S)
(S)
EVF Guide Piece
Spacer
(R)
(R)
Screw (R)
3mm
BLACK
Screw (S)
3mm
BLACK

Fig. 8

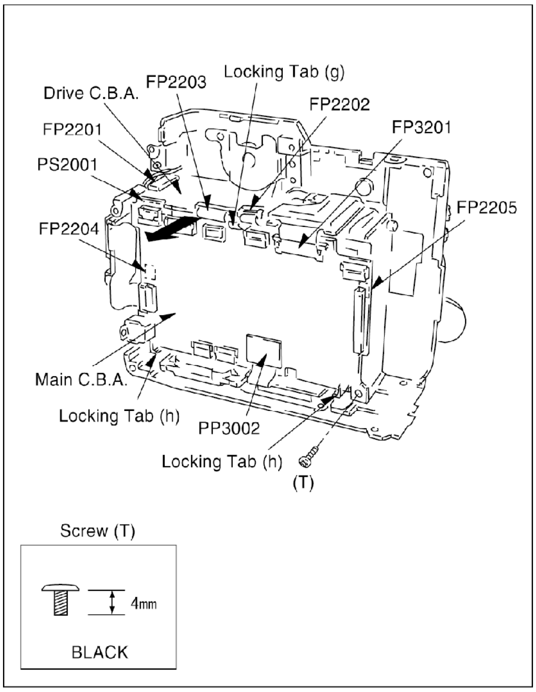

Drive C.B.A.
FP2203
Locking Tab (g)
FP2202
FP3201
FP2201
PS2001
FP2205
FP2204
Main C.B.A.
Locking Tab (h)
PP3002
Locking Tab (h)
(T)
Screw (T)
4mm
BLACK

Fig. 9

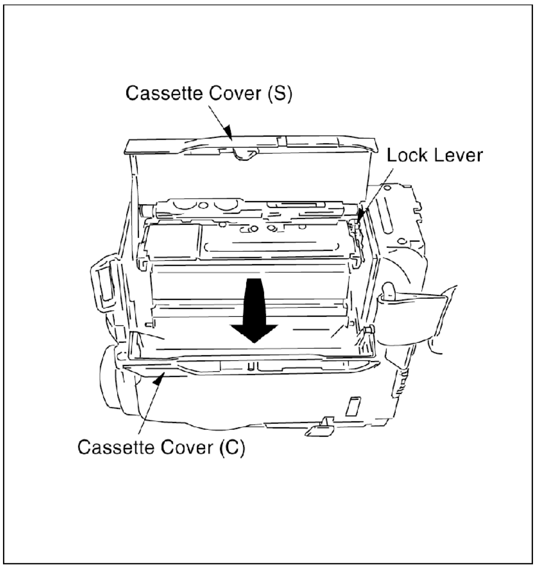
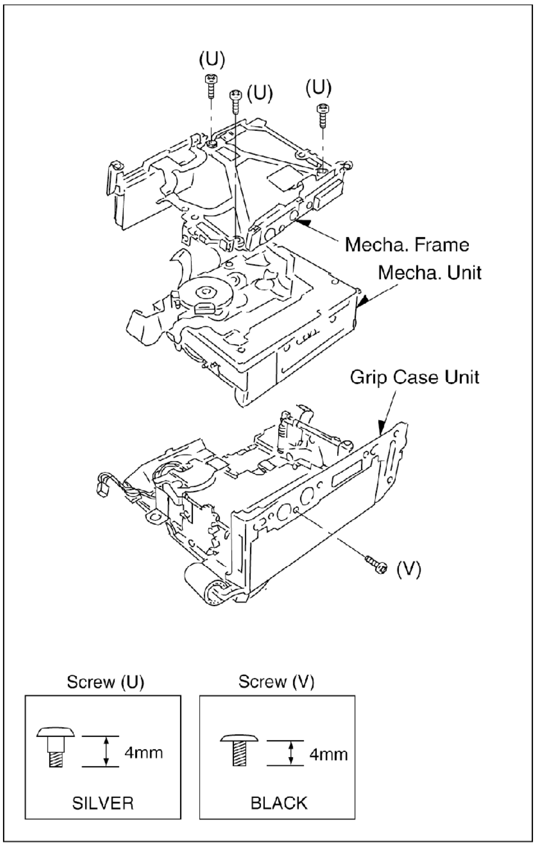

Cassette Cover (S)
Lock Lever
Cassette Cover (C)

Fig. 10



9.3. DISASSEMBLY PROCEDURES OF CAMERA LENS UNIT

The following flowchart describes order or steps for removing the Camera lens unit and certain printed circuit boards in order to make access to the item needing service. / To reassemble the unit follow the steps in reverse order.

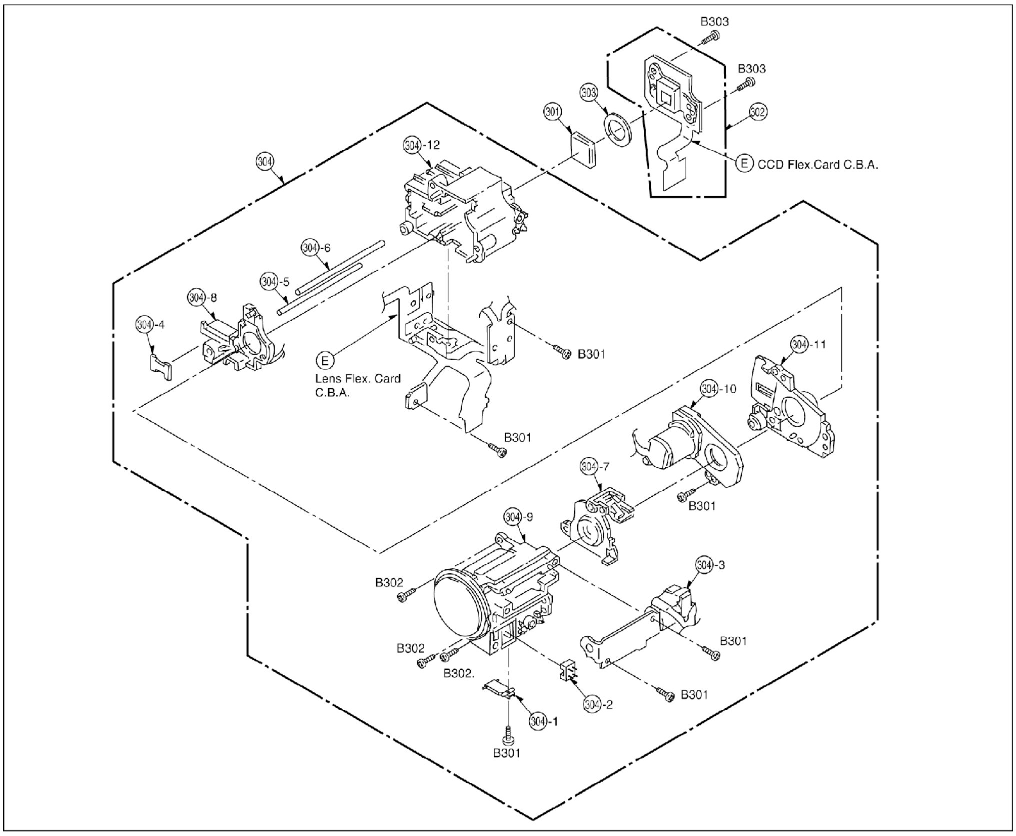
Fig. L1

1. CCD Unit	Ref.-No. 302
2. CCD Cushion & Crystal Filter	Ref.-No. 301/303
3. Lens Flex. Card C.B.A. & Zoom Motor Unit & Iris Unit	Ref.-No. 304-3/304-10
4. Main Frame Unit & MR Sensor	Ref.-No. 304-9/304-1
5. 4TH Moving Frame Unit & Guide Pole	Ref.-No. 304-8/304-51/304-6
6. 3RD Lens Frame Unit	Ref.-No. 304-11
7. 2ND Moving Frame Unit	Ref.-No. 304-7

Note 1: Inside of 4th Moving Frame has actuator coil, this coil conect to the Lens Flex. Card C.B.A. Please handle the Lens Flex. Card C.B.A. with care durring disassembly and assembly.

Note 2: Each Ref.-numbers are equivalant to number of Fig. L1 and Parts List.

Fig. L2


B303
B303
302
303
301
E CCD Flex.Card C.B.A.
304-12
304
304-6
304-5
304-8
304-4
E Lens Flex. Card C.B.A.
B301
304-11
304-10
B301
B301
304-7
304-9
B302
304-3
B301
B302
B302.
B301
304-2
304-1
B301

10. ABBREVIATIONS

11. WAVEFORM TABLE

12. SCHEMATIC DIAGRAMS

12.1. OVERALL SCHEMATIC DIAGRAM

12.2. INTERCONNECTION SCHEMATIC DIAGRAM

12.3. E.V.F. SCHEMATIC DIAGRAM

12.4. POWER SCHEMATIC DIAGRAM

12.5. DRIVE SCHEMATIC DIAGRAM

12.6. MIC UNIT SCHEMATIC DIAGRAM

12.7. MONITOR& SENSOR FLEX. CARD SCHEMATIC DIAGRAM

12.8. CCD FLEX. CARD SCHEMATIC DIAGRAM

12.9. TOP OPERATION SCHEMATIC DIAGRAM

12.10. MULTI JACK SCHEMATIC DIAGRAM

12.11. S/S POWER FLEX. CARD SCHEMATIC DIAGRAM

12.12. MMC/AV JACK SCHEMATAIC DIAGRAM

12.13. SIDE OPERATION UNIT SCHEMATIC DIAGRAM

13. CIRCUIT BOARD ASSEMBLIES

13.1. POWER C.B.A.

13.2. DRIVE C.B.A.

13.3. MIC UNIT

13.4. MONITOR C.B.A.

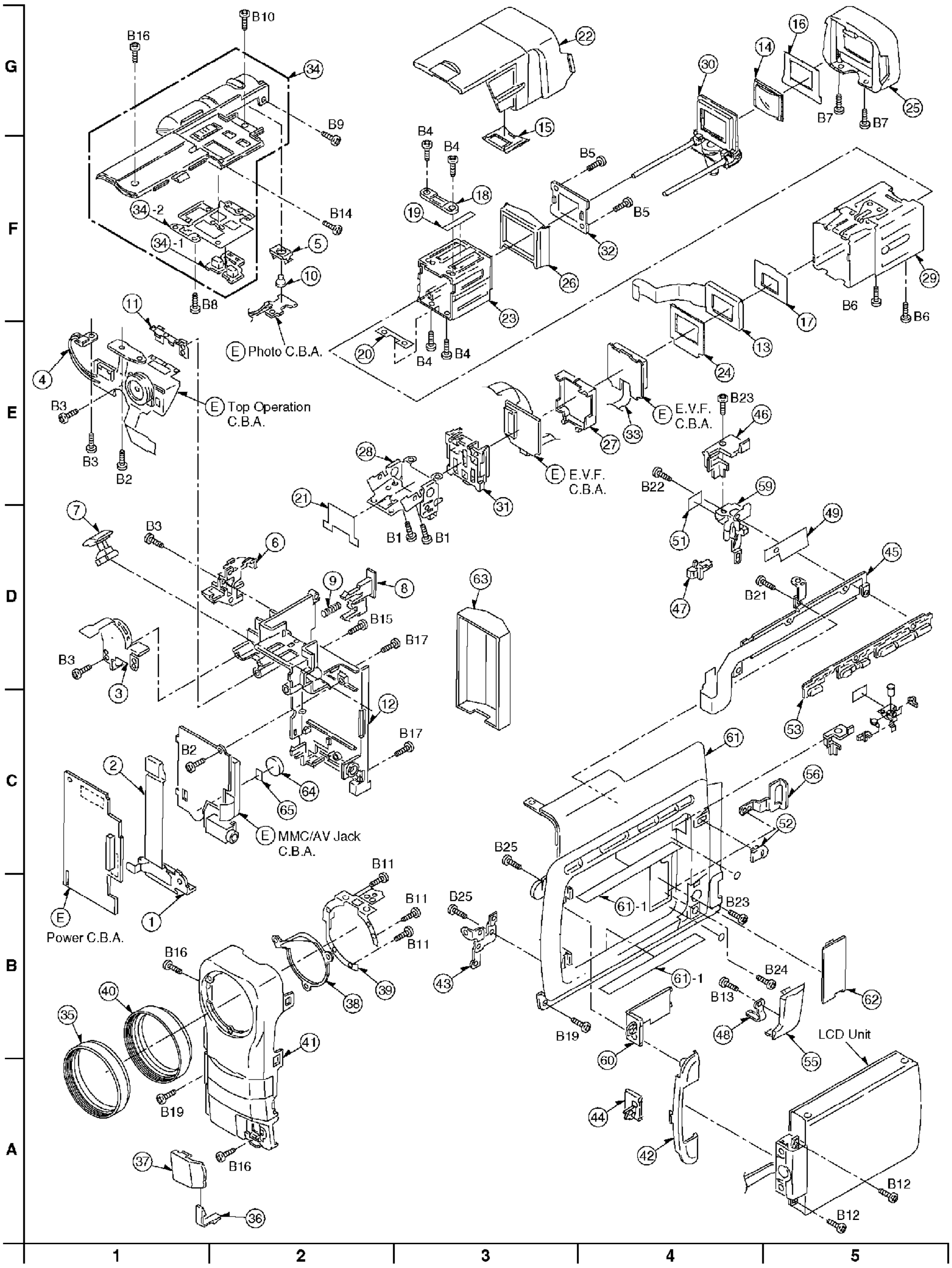
13.5. E.V.F. C.B.A.

13.6. CCD FLEX. CARD C.B.A.

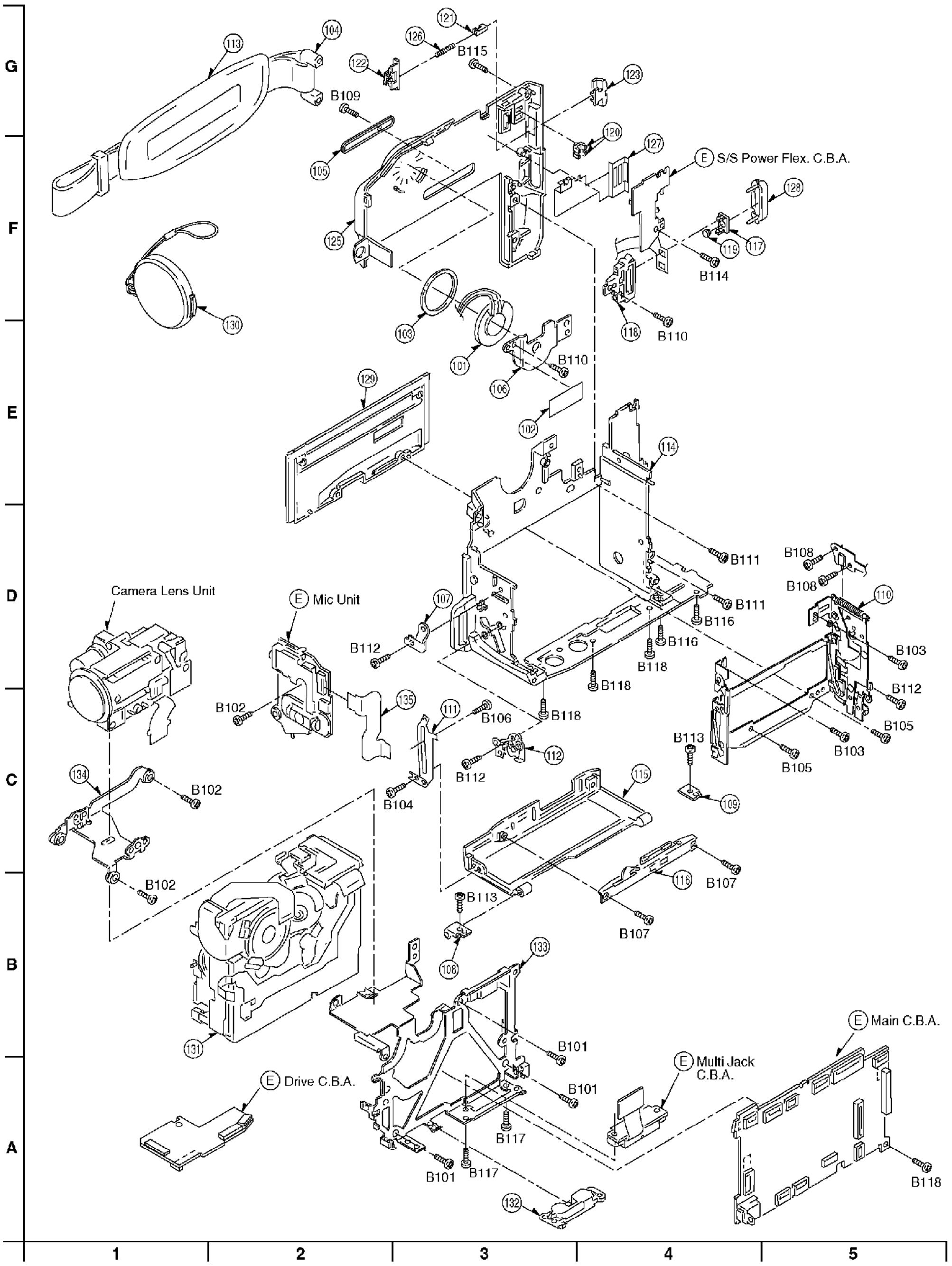
13.7. MULTI JACK C.B.A.

14. EXPLODED VIEWS

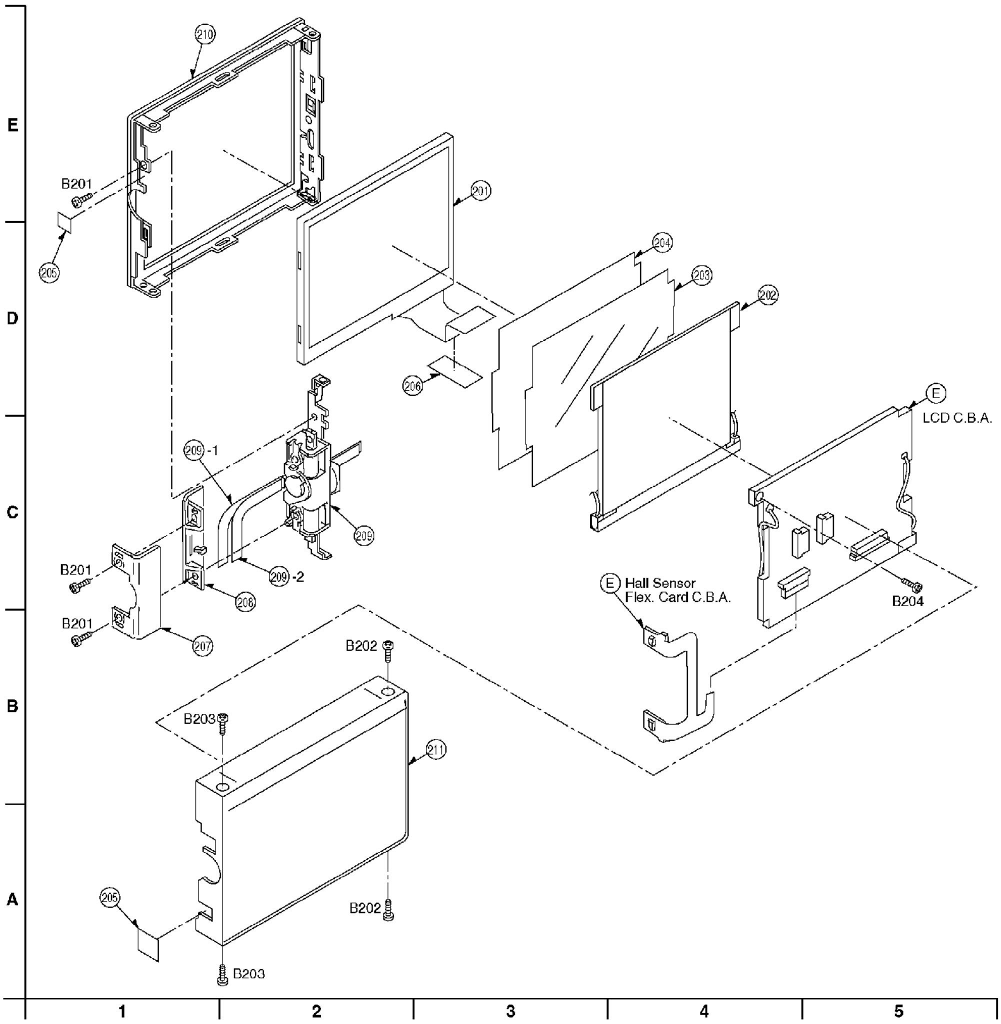
14.1. FRAME& CASING SECTION (1)


G
F
E
D
C
B
A
1
2
3
4
5
B10
B16
34
B9
34-2
34-1
B14
5
10
B8
Photo C.B.A.
Top Operation C.B.A.
11
4
B3
B3
B2
22
15
B4
B4
18
19
23
20
B4
B4
B5
B5
32
26
30
14
16
25
B7
B7
29
B6
B6
17
13
24
E.V.F. C.B.A.
B23
46
33
27
E.V.F. C.B.A.
31
28
21
B1
B1
B22
59
51
49
47
45
B21
7
B3
6
9
8
B15
B17
3
B3
12
B17
63
53
61
56
52
2
B2
64
65
MMC/AV Jack C.B.A.
1
Power C.B.A.
B11
B11
B11
B25
B25
43
38
39
61-1
61-1
B23
B24
B13
62
B16
40
35
41
B19
B19
60
48
55
LCD Unit
44
42
37
B16
36
B12
B12

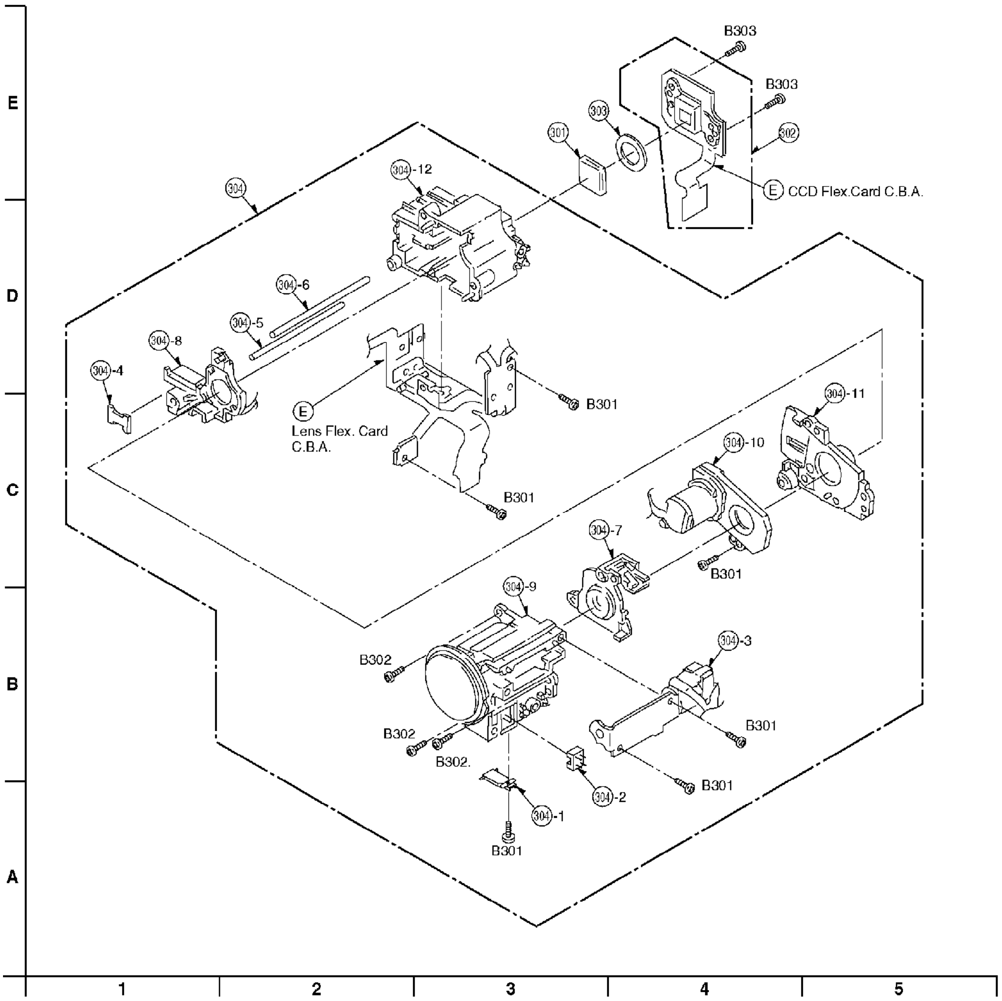
14.2. FRAME& CASING SECTION (2)


G
F
E
D
C
B
A
1
2
3
4
5
113
104
121
126
B115
122
B109
123
105
120
127
E S/S Power Flex. C.B.A.
128
125
119
117
B114
130
103
101
118
B110
106
B110
129
102
114
B111
B108
B108
110
Camera Lens Unit
E Mic Unit
107
B111
B116
B112
B116
B103
B118
B118
B112
B102
135
111
B106
B118
B113
B105
B103
112
B105
134
B102
B112
115
109
B104
116
B107
B102
B113
B107
133
108
131
E Main C.B.A.
B101
E Multi Jack C.B.A.
E Drive C.B.A.
B101
B117
B118
B101
B117
132

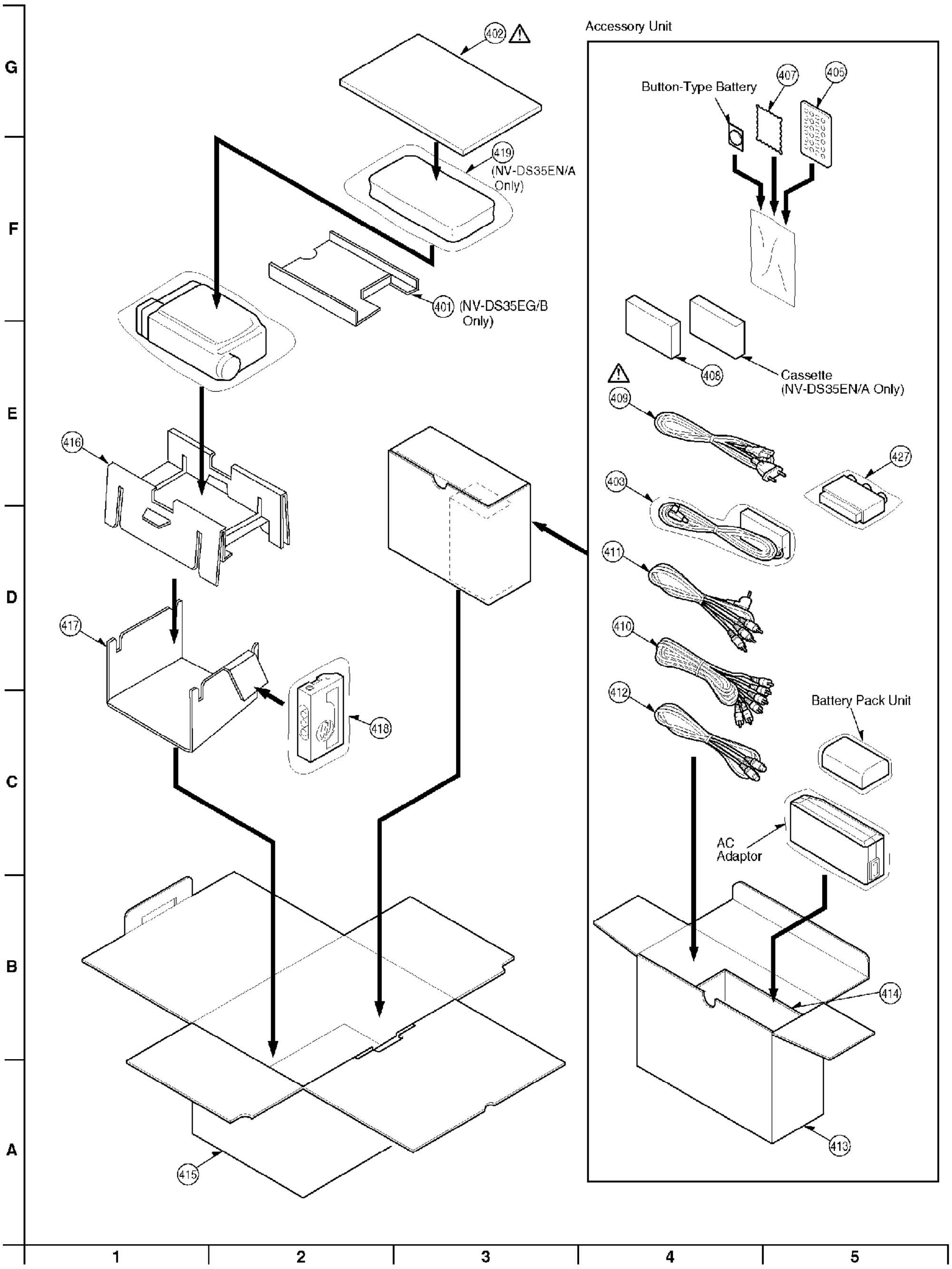
14.3. LCD SECTION


E
D
C
B
A
1
2
3
4
5
210
B201
205
201
204
203
202
206
E
LCD C.B.A.
209 -1
209
209 -2
208
B201
B201
207
E Hall Sensor
Flex. Card C.B.A.
B204
B202
B203
211
205
B202
B203

14.4. CAMERA LENS SECTION

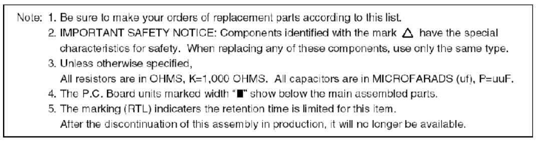

E
D
C
B
A
1
2
3
4
5
B303
B303
303
301
302
304-12
304
E CCD Flex.Card C.B.A.
304-6
304-5
304-8
304-4
E
Lens Flex. Card
C.B.A.
B301
B301
304-11
304-10
304-7
B301
304-9
B302
304-3
B301
B302
B302.
304-2
B301
304-1
B301

14.5. PACKING PARTS& ACCESSORIES SECTION


G
F
E
D
C
B
A
1
2
3
4
5
402 △
Accessory Unit
Button-Type Battery
407
405
419 (NV-DS35EN/A Only)
401 (NV-DS35EG/B Only)
406
Cassette (NV-DS35EN/A Only)
△
409
416
403
427
411
417
410
412
Battery Pack Unit
418
AC Adaptor
414
413
415

15. REPLACEMENT PARTS LIST

15.1. ELECTRICAL PARTS LIST


Note: 1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE: Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified,
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICROFARADS (uf), P=uuF.
4. The P.C. Board units marked width "■" show below the main assembled parts.
5. The marking (RTL) indicaters the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
■	VEP03F07E	MAIN C.B.A.	1	(RTL) NV-DS35EG/B
■	VEP03F07F	MAIN C.B.A.	1	(RTL) NV-DS35EN/A
■	VEP01849C	POWER C.B.A.	1	(RTL)
■	VEP26225B	LCD C.B.A.	1	(RTL)
■	VEK8781	MIC UNIT	1	
■	VEP28261D	EVF C.B.A.	1	(RTL)
■	VEP02567A	DRIVE C.B.A.	1	(RTL)
■	VEP000D0B	MMC/AV JACK C.B.A.	1	(RTL)
■	VEP06D07B	S/S POWER FLEX.CARD C.B.A	1	(RTL)
■	VEP22290A	CCD FLEX. CARD C.B.A.	1	(RTL)
■	VEP000C2A	TOP OPERATION C.B.A.	1	(RTL)
■	VEP000A5A	PHOTO C.B.A.	1	(RTL)
■	VEP000C1A	MULTI JACK C.B.A.	1	(RTL)
■	VEK8892	LENS FLEX. CARD C.B.A.	1	(RTL)
■	VEP06D10A	HALL SENSOR FLEX. CARD	1	(RTL)
■	VEP03F07E	MAIN C.B.A.		(RTL) NV-DS35EG/B
■	VEP03F07F	MAIN C.B.A.		(RTL) NV-DS35EN/A

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
FP601	VJS3971B017	CONNECTOR (FEMALE) 17P	1	
FP602	VJS3971B021	CONNECTOR (FEMALE) 21P	1	
FP603	VJS3971B021	CONNECTOR (FEMALE) 21P	1	
FP701	VJS3971B027	CONNECTOR (FEMALE) 27P	1	
FP2204	VJS4273B008	CONNECTOR (FEMALE) 8P	1	
FP2205	VJS4273B012	CONNECTOR (FEMALE) 12P	1	
FP2206	VJS4036B010	CONNECTOR (FEMALE) 10P	1	
FP2207	VJS3971B021	CONNECTOR (FEMALE) 21P	1	
FP3201	VJS3319B024	CONNECTOR (FEMALE) 24P	1	
FP4001	VJS3971B027	CONNECTOR (FEMALE) 27P	1	
JK3801	VJJ0651	DV JACK	1	
PP1001	VJP4029D090	CONNECTOR (MALE) 90P	1	
PP3001	VJP4119C060	CONNECTOR (MALE) 60P	1	
PP3002	VJP4009C030	CONNECTOR (MALE) 30P	1	
PS201	VJS4009A020	CONNECTOR (FEMALE) 20P	1	
PS2001	VJS4288A040	CONNECTOR (FEMALE) 40P	1	
PS2202	VJS4009A020	CONNECTOR (FEMALE) 20P	1	
■	VEP01849C	POWER C.B.A.		(RTL)
C1001	ECUM1C106VBP	C.CAPACITOR CH 16V 10U	1	
C1003	ECUM1C106VBP	C.CAPACITOR CH 16V 10U	1	
C1005	ECUM1A335KBN	C.CAPACITOR CH 10V 3.3U	1	
C1011	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C1012	ECUM1A335KBN	C.CAPACITOR CH 10V 3.3U	1	
C1013	ECUX1E331KBQ	C.CAPACITOR CH 25V 330P	1	
C1014	ECUX1C223KBQ	C.CAPACITOR CH 16V 0.022U	1	
C1016	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1018	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1021	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C1022	ECUM1A335KBN	C.CAPACITOR CH 10V 3.3U	1	
C1023	ECUX1E331KBQ	C.CAPACITOR CH 25V 330P	1	
C1024	ECUX1C223KBQ	C.CAPACITOR CH 16V 0.022U	1	
C1025	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
C1026	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1027	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1029	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1031	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C1032	ECUM1A335KBN	C.CAPACITOR CH 10V 3.3U	1	
C1033	ECUX1E222KBQ	C.CAPACITOR CH 25V 2200P	1	
C1036	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1037	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1041	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C1042	ECUM1A335KBN	C.CAPACITOR CH 10V 3.3U	1	
C1043	ECUX1E331KBQ	C.CAPACITOR CH 25V 330P	1	
C1044	ECUX1C223KBQ	C.CAPACITOR CH 16V 0.022U	1	
C1045	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
C1046	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	

C1046	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C1052	ECUM1E105KBM	C.CAPACITOR CH 25V 1U	1	
C1053	ECUX1E222KBQ	C.CAPACITOR CH 25V 2200P	1	
C1055	ECUM1C106VBP	C.CAPACITOR CH 16V 10U	1	
C1056	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1057	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1063	ECUM1A225KBN	C.CAPACITOR CH 10V 2.2U	1	
C1064	ECUM1A225KBN	C.CAPACITOR CH 10V 2.2U	1	
C1065	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1066	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1085	ECUM1C105KBM	C.CAPACITOR CH 16V 1U	1	
C1101	ECUX1H101JCQ	C.CAPACITOR CH 50V 100P	1	
C1102	ECUX1A334KBV	C.CAPACITOR CH 10V 0.33U	1	
C1103	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
C1104	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C1105	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1106	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C1107	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1108	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C1111	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	1	
C1112	ECUX1E471KBQ	C.CAPACITOR CH 25V 470P	1	
C1113	ECUX1H151JCQ	C.CAPACITOR CH 50V 150P	1	
C1114	ECUX1H390JCQ	C.CAPACITOR CH 50V 39P	1	
C1117	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1118	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
C1121	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C1122	ECUX1E472KBQ	C.CAPACITOR CH 25V 4700P	1	
C1123	ECUX1H151JCQ	C.CAPACITOR CH 50V 150P	1	
C1124	ECUX1H390JCQ	C.CAPACITOR CH 50V 39P	1	
C1125	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1128	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1129	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1131	ECUX1E223KBV	C.CAPACITOR CH 25V 0.022U	1	
C1132	ECUX1E471KBQ	C.CAPACITOR CH 25V 470P	1	
C1133	ECUX1H151JCQ	C.CAPACITOR CH 50V 150P	1	
C1134	ECUX1H390JCQ	C.CAPACITOR CH 50V 39P	1	
C1141	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C1142	ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C1143	ECUX1H151JCQ	C.CAPACITOR CH 50V 150P	1	
C1144	ECUX1H390JCQ	C.CAPACITOR CH 50V 39P	1	
C1150	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1151	ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	1	
C1152	ECUX1C822KBQ	C.CAPACITOR CH 16V 8200P	1	
C1153	ECUX1H151JCQ	C.CAPACITOR CH 50V 150P	1	
C1154	ECUX1H820JCQ	C.CAPACITOR CH 50V 82P	1	
C1155	ECUM1A225KBN	C.CAPACITOR CH 10V 2.2U	1	
C1156	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
D1051	SB05-05CP	DIODE	1	
D1052	1SS355	DIODE	1	
D1101	MA8120-L	DIODE	1	
D1151	MA8160-M	DIODE	1	
D1152	1SS355	DIODE	1	
FP1001	VJS4274B015	CONNECTOR (FEMALE) 15P	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
FP1002	VJS4273B014	CONNECTOR (FEMALE) 14P	1	
IC1001	BA9734AKV	IC	1	
IC1002	NJM2406F	IC	1	
IC1403	PQ20VZ1U	IC	1	
IP1001	VSF0233F31	IC PROTECTOR	1	⚠
L1001	VLQ0827M3R9	COIL 3.9UH	1	
L1011	VLQ0827M470	COIL 47UH	1	
L1012	VLQ0779M4R7	COIL 4.7UH	1	
L1014	VLQ0779K100	COIL 10UH	1	
L1017	VLQ0464K100	COIL 10UH	1	
L1021	VLQ0827M150	COIL 15UH	1	
L1022	VLQ0827M4R7	COIL 4.7UH	1	
L1023	VLQ0779M4R7	COIL 4.7UH	1	
L1025	VLQ0780K100	COIL 10UH	1	
L1026	VLQ0779K100	COIL 10UH	1	
L1028	VLQ0779K100	COIL 10UH	1	
L1029	VLQ0779K100	COIL 10UH	1	
L1031	VLQ0827M560	COIL 56UH	1	
L1032	VLQ0779K100	COIL 10UH	1	
L1033	VLQ0779M4R7	COIL 4.7UH	1	
L1041	VLQ0827M150	COIL 15UH	1	
L1042	VLQ0810M4R7	COIL 4.7UH	1	
L1051	VLQ0779K331	COIL 330UH	1	
L1052	VLQ0780K100	COIL 10UH	1	
L1061	VLQ0827M330	COIL 33UH	1	
L1062	VLQ0827M820	COIL 82UH	1	
L1081	VLQ0779K331	COIL 330UH	1	
LB1001	VLP0332A420	CHIP BEAD	1	
PS1001	VJS4029A090	CONNECTOR (FEMALE) 90P	1	
Q1011	FP102	TRANSISTOR	1	
Q1021	FP102	TRANSISTOR	1	
Q1022	2SK2151	TRANSISTOR	1	
Q1031	FP102	TRANSISTOR	1	
Q1041	FP102	TRANSISTOR	1	
Q1042	2SK2151	TRANSISTOR	1	
Q1051	2SB798A	TRANSISTOR	1	
Q1052	2SB970X	TRANSISTOR	1	
Q1053	2SC4617H	TRANSISTOR	1	
Q1054	UMS1N-TR	TRANSISTOR	1	
Q1055	2SC4617H	TRANSISTOR	1	
Q1056	2SA1774HR	TRANSISTOR	1	
Q1061	FP102	TRANSISTOR	1	
Q1062	FP102	TRANSISTOR	1	
Q1251	2SB970X	TRANSISTOR	1	
Q1252	UMW1N-TR	TRANSISTOR	1	
QR1001	DTA114EH	TRANSISTOR-RESISTOR	1	
QR1004	DTA114TH	TRANSISTOR-RESISTOR	1	

[illegible]	[illegible]	TRANSISTOR-RESISTOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
QR1050	DTC144EH	TRANSISTOR-RESISTOR	1	
QR1101	DTC114YH	TRANSISTOR-RESISTOR	1	
R1003	ERJ2GEJ225	M.RESISTOR CH 1/16W 2.2M	1	
R1005	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R1008	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R1010	ERJ2RKD820	M.RESISTOR CH 1/16W 82	1	
R1011	ERJ6RBB682	M.RESISTOR CH 1/10W 6.8K	1	
R1012	ERJ2RKD820	M.RESISTOR CH 1/16W 82	1	
R1013	ERJ3RBD391	M.RESISTOR CH 1/16W 390	1	
R1014	ERJ6RBB272	M.RESISTOR CH 1/10W 2.7K	1	
R1015	ERJ2GEJ331	M.RESISTOR CH 1/16W 330	1	
R1016	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R1020	ERJ2RKD820	M.RESISTOR CH 1/16W 82	1	
R1021	ERJ6RBB272	M.RESISTOR CH 1/10W 2.7K	1	
R1022	ERJ2RKD820	M.RESISTOR CH 1/16W 82	1	
R1023	ERJ3RBD391	M.RESISTOR CH 1/16W 390	1	
R1024	ERJ6RBB272	M.RESISTOR CH 1/10W 2.7K	1	
R1025	ERJ2GEJ331	M.RESISTOR CH 1/16W 330	1	
R1026	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R1030	ERJ2GEJ820	M.RESISTOR CH 1/16W 82	1	
R1031	ERJ6RBB332	M.RESISTOR CH 1/10W 3.3K	1	
R1032	ERJ2GEJ820	M.RESISTOR CH 1/16W 82	1	
R1033	ERJ3RBD331	M.RESISTOR CH 1/16W 330	1	
R1034	ERJ6RBB272	M.RESISTOR CH 1/10W 2.7K	1	
R1040	ERJ2RKD820	M.RESISTOR CH 1/16W 82	1	
R1041	ERJ6RBB152	M.RESISTOR CH 1/10W 1.5K	1	
R1042	ERJ2RKD820	M.RESISTOR CH 1/16W 82	1	
R1043	ERJ3RBD511	M.RESISTOR CH 1/16W 510	1	
R1044	ERJ6RBB272	M.RESISTOR CH 1/10W 2.7K	1	
R1045	ERJ2GEJ331	M.RESISTOR CH 1/16W 330	1	
R1050	ERJ2RKD820	M.RESISTOR CH 1/16W 82	1	
R1051	ERJ6RBB273	M.RESISTOR CH 1/10W 27K	1	
R1052	ERJ2RKD820	M.RESISTOR CH 1/16W 82	1	
R1053	ERJ3RBD151	M.RESISTOR CH 1/16W 150	1	
R1054	ERJ6RBB272	M.RESISTOR CH 1/10W 2.7K	1	
R1056	ERJ2RHD273	M.RESISTOR CH 1/16W 27K	1	
R1057	ERJ2RHD113	M.RESISTOR CH 1/16W 11K	1	
R1058	ERJ2RHD561	M.RESISTOR CH 1/16W 560	1	
R1059	ERJ2RHD272	M.RESISTOR CH 1/16W 2.7K	1	
R1101	ERJ2RHD223	M.RESISTOR CH 1/16W 22K	1	
R1102	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R1103	ERJ2GEJ273	M.RESISTOR CH 1/16W 27K	1	
R1104	ERJ2GEJ123	M.RESISTOR CH 1/16W 12K	1	
R1107	ERJ2GEJ225	M.RESISTOR CH 1/16W 2.2M	1	
R1108	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R1109	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R1111	ERJ2GEJ151	M.RESISTOR CH 1/16W 150	1	
R1112	ERJ2GEJ822	M.RESISTOR CH 1/16W 8.2K	1	
R1121	ERJ2GEJ151	M.RESISTOR CH 1/16W 150	1	
R1122	ERJ2GEJ682	M.RESISTOR CH 1/16W 6.8K	1	
R1131	ERJ2GEJ151	M.RESISTOR CH 1/16W 150	1	
R1132	ERJ2GEJ822	M.RESISTOR CH 1/16W 8.2K	1	
R1141	ERJ2GEJ151	M.RESISTOR CH 1/16W 150	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R1142	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R1151	ERJ2GEJ151	M.RESISTOR CH 1/16W 150	1	
R1152	ERJ2GEJ822	M.RESISTOR CH 1/16W 8.2K	1	
R1153	ERJ2RHD123	M.RESISTOR CH 1/16W 12K	1	
R1154	ERJ2RHD473	M.RESISTOR CH 1/16W 47K	1	
R1155	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R1156	ERJ2GEJ332	M.RESISTOR CH 1/16W 3.3K	1	
R1157	ERJ2GEJ272	M.RESISTOR CH 1/16W 2.7K	1	
R1158	ERJ2RHD471	M.RESISTOR CH 1/16W 470	1	
R1159	ERJ2RHD272	M.RESISTOR CH 1/16W 2.7K	1	
R1251	ERJ2GEJ224	M.RESISTOR CH 1/16W 220K	1	
R1252	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R1253	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R1254	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R1255	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R1256	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R1257	ERJ2GEJ332	M.RESISTOR CH 1/16W 3.3K	1	
R1258	ERJ2GEJ272	M.RESISTOR CH 1/16W 2.7K	1	
R1401	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R1402	ERJ2RHD102	M.RESISTOR CH 1/16W 1K	1	
R1403	ERJ2RHD102	M.RESISTOR CH 1/16W 1K	1	
R1404	ERJ2RHD272	M.RESISTOR CH 1/16W 2.7K	1	
R1405	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
T1051	VTP0510	DC/DC TRANSFORMER	1	
■	VEP26225B	LCD C.B.A.		(RTL)
C901	ECUM1C106VBP	C.CAPACITOR CH 16V 10U	1	
C902	ECST0JX476Z	T.CAPACITOR CH 6.3V 47U	1	
C903	ECST0JY226Z	T.CAPACITOR CH 6.3V 22U	1	
C904	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C905	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C906	ECUM1C106VBP	C.CAPACITOR CH 16V 10U	1	
C907	ECST0JY335Z	T.CAPACITOR CH 6.3V 3.3U	1	
C908	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C909	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C910	ECUX0J474KBV	C.CAPACITOR CH 6.3V 0.47U	1	
C911	ECUX0J474KBV	C.CAPACITOR CH 6.3V 0.47U	1	
C912	ECUX0J474KBV	C.CAPACITOR CH 6.3V 0.47U	1	
C913	ECUX0J474KBV	C.CAPACITOR CH 6.3V 0.47U	1	
C914	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C915	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C916	ECUX1A105VBV	C.CAPACITOR CH 10V 1U	1	
C917	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C918	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
C919	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C923	ECUX1E102KBQ	C.CAPACITOR CH 25V 1000P	1	
C924	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C925	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C926	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C927	ECUX1H560JCQ	C.CAPACITOR CH 50V 56P	1	

C927	ECCX1H560JCQ	C.CAPACITOR CH 50V 56P	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C928	ECUX1H560JCQ	C.CAPACITOR CH 50V 56P	1	
C929	ECUX1H560JCQ	C.CAPACITOR CH 50V 56P	1	
C930	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C931	ECUX1H390JCQ	C.CAPACITOR CH 50V 39P	1	
C932	ECUX1H221JCQ	C.CAPACITOR CH 50V 220P	1	
C934	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C935	ECUX1E682KBQ	C.CAPACITOR CH 25V 6800P	1	
C937	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C938	ECUX1H101JCQ	C.CAPACITOR CH 50V 100P	1	
C939	ECUX1H331JCV	C.CAPACITOR CH 50V 330P	1	
C940	ECUX1H560JCQ	C.CAPACITOR CH 50V 56P	1	
C941	ECUX1H100CCQ	C.CAPACITOR CH 50V 10P	1	
C942	ECUM1C474KBN	C.CAPACITOR CH 16V 0.47U	1	
C943	ECUX1A224KBV	C.CAPACITOR CH 10V 0.22U	1	
C944	ECUX1A224KBV	C.CAPACITOR CH 10V 0.22U	1	
C945	ECUX1E332KBQ	C.CAPACITOR CH 25V 3300P	1	
C946	ECUM1C106VBP	C.CAPACITOR CH 16V 10U	1	
C947	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C948	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C949	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C950	ECUM1C105KBN	C.CAPACITOR CH 10V 1U	1	
C951	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C952	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
D901	MA338	DIODE	1	
D902	MA6S121	DIODE	1	
D903	MA6S121	DIODE	1	
D904	MA159A	DIODE	1	
D905	RB520S30	DIODE	1	
D906	RB520S30	DIODE	1	
FP901	VJS4194B026	CONNECTOR (FEMALE) 26P	1	
FP903	VJS3971B021	CONNECTOR (FEMALE) 21P	1	
FP904	VJS3971B017	CONNECTOR (FEMALE) 17P	1	
FP905	VJS4297B006	CONNECTOR (FEMALE) 6P	1	
IC901	LV4131W	IC	1	
IC902	NJM2904V	IC	1	
IC903	TC7S04FU	IC	1	
IC904	TC7S14FU	IC	1	
IC905	SN74LV04APW	IC	1	
L901	VLQ0807K100	COIL 10UH	1	
L902	VLQ0807K100	COIL 10UH	1	
L903	VLQ0807K100	COIL 10UH	1	
L904	VLQ0807K100	COIL 10UH	1	
L907	VLQ0426J3R9	COIL 3.9UH	1	
Q901	2SC4617H	TRANSISTOR	1	
Q902	2SK3065T100	TRANSISTOR	1	
Q904	UMW1N-TR	TRANSISTOR	1	
Q905	2SB970X	TRANSISTOR	1	
QR901	DTC144TH	TRANSISTOR-RESISTOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
QR902	DTC144TH	TRANSISTOR-RESISTOR	1	
QR903	DTC114YH	TRANSISTOR-RESISTOR	1	
R901	ERJ2GEJ182	M.RESISTOR CH 1/16W 1.8K	1	
R902	ERJ2RHD152	M.RESISTOR CH 1/16W 1.5K	1	
R903	ERJ2RHD152	M.RESISTOR CH 1/16W 1.5K	1	
R904	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R905	ERJ2GEJ122	M.RESISTOR CH 1/16W 1.2K	1	
R906	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R907	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R908	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R909	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R910	ERJ2GEJ332	M.RESISTOR CH 1/16W 3.3K	1	
R911	ERJ2GEJ332	M.RESISTOR CH 1/16W 3.3K	1	
R912	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R913	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R914	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R915	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R916	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R917	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R918	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R919	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R920	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R921	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R922	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R923	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R924	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R925	ERJ2RHD563	M.RESISTOR CH 1/16W 56K	1	
R926	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R927	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R928	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R929	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R930	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R931	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R932	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R933	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R934	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R935	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R936	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R937	ERJ2GEJ182	M.RESISTOR CH 1/16W 1.8K	1	
R938	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R939	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R940	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R941	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R942	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R943	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R944	ERJ2GEJ152	M.RESISTOR CH 1/16W 1.5K	1	
R945	ERJ2RHD683	M.RESISTOR CH 1/16W 68K	1	
R946	ERJ2RHD563	M.RESISTOR CH 1/16W 56K	1	
R947	ERJ2RHD393	M.RESISTOR CH 1/16W 39K	1	
R951	ERJ2GEJ560	M.RESISTOR CH 1/16W 56	1	
R952	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R953	ERJ3GEYJ823	M.RESISTOR CH 1/16W 82K	1	
R954	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R955	ERJ3RBD333	M.RESISTOR CH 1/16W 33K	1	
R956	ERJ3RBD103	M.RESISTOR CH 1/16W 10K	1	
R957	ERJ3RBD101	M.RESISTOR CH 1/16W 100	1	
R958	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R959	ERJ2GEJ272	M.RESISTOR CH 1/16W 2.7K	1	
R960	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R961	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R962	ERJ2GEJ561	M.RESISTOR CH 1/16W 560	1	
R963	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R964	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R965	ERJ2GEJ563	M.RESISTOR CH 1/16W 56K	1	
R966	ERJ2GEJ152	M.RESISTOR CH 1/16W 1.5K	1	
R967	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R968	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R969	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R970	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	
R971	ERJ3GEYJ335	M.RESISTOR CH 1/16W 3.3M	1	
R972	ERJ2GEJ224	M.RESISTOR CH 1/16W 220K	1	
R973	ERJ8GEYJ335	M.RESISTOR CH 1/8W 3.3M	1	
R974	ERJ8GEYJ335	M.RESISTOR CH 1/8W 3.3M	1	
R975	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R976	ERJ3RBD681	M.RESISTOR CH 1/16W 680	1	
R977	ERJ3RED180	M.RESISTOR CH 1/16W 18	1	
R978	ERJ6GEYJ335	M.RESISTOR CH 1/10W 3.3M	1	
R979	ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R983	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R984	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R985	ERJ2RHD122	M.RESISTOR CH 1/16W 1.2K	1	
R986	ERJ2RHD182	M.RESISTOR CH 1/16W 1.8K	1	
T901	ETJ09K49AZ	CHIP TRANSFORMER	1	
T902	EFTU21R203	TRANSFORMER	1	
		MISCELLANEOUS		
	VMZ2939	LCD BARRIER	1	
■	VEK8781	MIC UNIT		(RTL)
C451	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C452	ECUX0J474KBV	C.CAPACITOR CH 6.3V 0.47U	1	
C4201	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C4202	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C4203	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
C4207	ECUM1A335KBN	C.CAPACITOR CH 10V 3.3U	1	
C4212	ECST0JX476Z	T.CAPACITOR CH 6.3V 47U	1	
C4214	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C4215	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C4219	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
C4220	ECUX1E102KBQ	C.CAPACITOR CH 25V 1000P	1	
C4221	ECUX1E102KBQ	C.CAPACITOR CH 25V 1000P	1	
C4801	ECUX1C333KBV	C.CAPACITOR CH 16V 0.033U	1	
C4802	ECUX1C823KBV	C.CAPACITOR CH 16V 0.082U	1	

C4802	ECUX1C823KBV	C.CAPACITOR CH 16V 0.082U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C4804	ECUX1E561KBQ	C.CAPACITOR CH 25V 560P	1	
C4805	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
C4806	ECUX1C333KBV	C.CAPACITOR CH 16V 0.033U	1	
C4807	ECUX1C823KBV	C.CAPACITOR CH 16V 0.082U	1	
C4808	ECUX1E561KBQ	C.CAPACITOR CH 25V 560P	1	
C4809	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
C4814	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C4816	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C4817	ECST0JY226Z	T.CAPACITOR CH 6.3V 22U	1	
C4830	ECST0JY226Z	T.CAPACITOR CH 6.3V 22U	1	
C4901	ECUX1E222KBQ	C.CAPACITOR CH 25V 2200P	1	
C4902	ECUX1E222KBQ	C.CAPACITOR CH 25V 2200P	1	
C4903	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C4905	ECST0JY226Z	T.CAPACITOR CH 6.3V 22U	1	
C4908	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C4910	ECST0JY226Z	T.CAPACITOR CH 6.3V 22U	1	
C4912	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C4914	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C4915	ECUX1E273KBV	C.CAPACITOR CH 25V 0.027U	1	
C4916	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C4917	ECUX1E273KBV	C.CAPACITOR CH 25V 0.027U	1	
C6401	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
C6402	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
D451	DAP222	DIODE	1	
D6801	CL170UR-CD	CHIP LED	1	
D6802	PH310	DIODE	1	
FL4901	VLF1486A206	FILTER	1	
FL4902	VLF1486A206	FILTER	1	
FP4801	VJS4264B027	CONNECTOR (FEMALE) 27P	1	
IC4201	NJM2151V	IC	1	
IC4801	NJM2112V	IC	1	
IR6401	VEK8283	IR RECEIVER	1	
JK4801	VJJ0414	MIC JACK	1	
L4201	VLQ0807K100	COIL 10UH	1	
L4202	VLQ0464K100	COIL 10UH	1	
L6401	VLQ0807K220	COIL 22UH	1	
P4201	VJP3172B002	CONNECTOR (MALE) 2P	1	
Q451	2SD1030	TRANSISTOR	1	
Q452	2SC4617H	TRANSISTOR	1	
Q4805	2SC4617H	TRANSISTOR	1	
Q4810	2SC4617H	TRANSISTOR	1	
Q4811	2SC4617H	TRANSISTOR	1	
Q4901	2SC4617H	TRANSISTOR	1	
Q4902	2SA1774HR	TRANSISTOR	1	
Q4903	2SC4617H	TRANSISTOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Q4904	2SA1774HR	TRANSISTOR	1	
Q4905	2SC4617H	TRANSISTOR	1	
Q4906	2SC4617H	TRANSISTOR	1	
Q4907	2SC4617H	TRANSISTOR	1	
QR4903	DTC124EH	TRANSISTOR-RESISTOR	1	
QR4904	DTC124EH	TRANSISTOR-RESISTOR	1	
R451	ERJ3GEYJ225	M.RESISTOR CH 1/16W 2.2K	1	
R452	ERJ2GEJ334	M.RESISTOR CH 1/16W 330K	1	
R453	ERJ2GEJ822	M.RESISTOR CH 1/16W 8.2K	1	
R454	ERJ2GEJ182	M.RESISTOR CH 1/16W 1.8K	1	
R455	ERJ3GEYJ106	M.RESISTOR CH 1/16W 10M	1	
R4201	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R4202	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R4203	ERJ2GEJ123	M.RESISTOR CH 1/16W 12K	1	
R4205	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R4206	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R4225	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R4228	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R4230	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R4801	ERJ6GEYJ392	M.RESISTOR CH 1/10W 3.9K	1	
R4802	ERJ6GEYJ392	M.RESISTOR CH 1/10W 3.9K	1	
R4803	ERJ6GEYJ392	M.RESISTOR CH 1/10W 3.9K	1	
R4805	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R4806	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R4807	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R4808	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R4809	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R4810	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R4811	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R4812	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R4814	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R4815	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R4816	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R4818	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R4823	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R4824	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R4861	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4864	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4898	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R4899	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R4901	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R4902	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R4904	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R4905	ERJ2GEJ471	M.RESISTOR CH 1/16W 470	1	
R4906	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R4907	ERJ6GEYJ154	M.RESISTOR CH 1/10W 150K	1	
R4908	ERJ6GEYJ563	M.RESISTOR CH 1/10W 56K	1	
R4909	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R4910	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	
R4911	ERJ2GEJ181	M.RESISTOR CH 1/16W 180	1	
R4912	ERJ2GEJ471	M.RESISTOR CH 1/16W 470	1	
R4913	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R4914	ERJ6GEYJ154	M.RESISTOR CH 1/10W 150K	1	
R4915	ERJ6GEYJ563	M.RESISTOR CH 1/10W 56K	1	
R4916	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R4917	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	
R4918	ERJ2GEJ181	M.RESISTOR CH 1/16W 180	1	
R4919	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4920	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R4924	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	
R4925	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R4926	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R4928	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	
R4929	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R4930	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R6803	ERJ6GEYJ181	M.RESISTOR CH 1/10W 180	1	
S6901	VSP0584	SWITCH	1	
		MISCELLANEOUS		
	VMG1107	RUBBER	1	
	VSC4932	MIC SHIELD CASE	1	
■	VEP28261D	EVF C.B.A.		(RTL)
BL881	VLL0203	FLUORESCENT LAMP	1	
C801	ECUM1A335KBM	C.CAPACITOR CH 10V 3.3U	1	
C802	ECUM1A226MBS	C.CAPACITOR CH 10V 22U	1	
C827	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C829	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C830	ECUX1H470JCV	C.CAPACITOR CH 50V 47P	1	
C832	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C833	ECST1CY225Z	T.CAPACITOR CH 16V 2.2U	1	
C834	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C835	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C836	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C837	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C838	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
C839	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
C865	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C866	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
D801	MA338	DIODE	1	
D803	1SS355	DIODE	1	
FP801	VJS4012B018	CONNECTOR (FEMALE) 18P	1	
FP802	VJS3319B016	CONNECTOR (FEMALE) 16P	1	
IC802	ET2071F0A	IC	1	
IC805	TA75S558F	IC	1	
L801	VLQ0426J6R8	COIL 6.8UH	1	
L803	VLQ0807K100	COIL 10UH	1	

L803	VLQ0807K100	COIL 10UH	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
L804	VLQ0807K100	COIL 10UH	1	
L805	VLQ0807K100	COIL 10UH	1	
L881	VLQ0779K100	COIL 10UH	1	
Q881	2SK2055	TRANSISTOR	1	
R802	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R805	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R807	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R808	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R832	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R834	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R835	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R836	ERJ2GEJ471	M.RESISTOR CH 1/16W 470	1	
R841	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R849	ERJ2GEJ471	M.RESISTOR CH 1/16W 470	1	
R850	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R851	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R852	ERJ2GEJ682	M.RESISTOR CH 1/16W 6.8K	1	
R878	ERJ2RHD223	M.RESISTOR CH 1/16W 22K	1	
R879	ERJ2RHD183	M.RESISTOR CH 1/16W 18K	1	
R880	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R881	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
T881	ETJ11K73AM	TRANSFORMER	1	
W802	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
W803	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
		MISCELLANEOUS		
	VWJ1327	EVF FLEX.	1	
■	VEP02567A	DRIVE C.B.A.		(RTL)
C2202	ECUX0J105KBV	C.CAPACITOR CH 50V 1U	1	
C2203	ECUX1E332KBQ	C.CAPACITOR CH 25V 3300P	1	
C2205	ECUX0J105KBV	C.CAPACITOR CH 50V 1U	1	
C2206	ECUX1E332KBQ	C.CAPACITOR CH 25V 3300P	1	
C2207	ECUX1E331KBQ	C.CAPACITOR CH 25V 330P	1	
C2208	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C2209	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C2210	ECUX0J105KBV	C.CAPACITOR CH 50V 1U	1	
C2212	VCS0JP106	E.CAPACITOR 6.3V 10U	1	
C2213	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C2214	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C2216	VCS0JP106	E.CAPACITOR 6.3V 10U	1	
C2217	ECUX0J105VBV	C.CAPACITOR CH 6.3V 1U	1	
C2218	ECUX1H470JCQ	C.CAPACITOR CH 50V 47P	1	
C2219	ECUX0J105KBV	C.CAPACITOR CH 50V 1U	1	
C2220	ECUX1E102KBQ	C.CAPACITOR CH 25V 1000P	1	
C2221	ECUX0J105KBV	C.CAPACITOR CH 50V 1U	1	
C2222	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	

C2222	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	

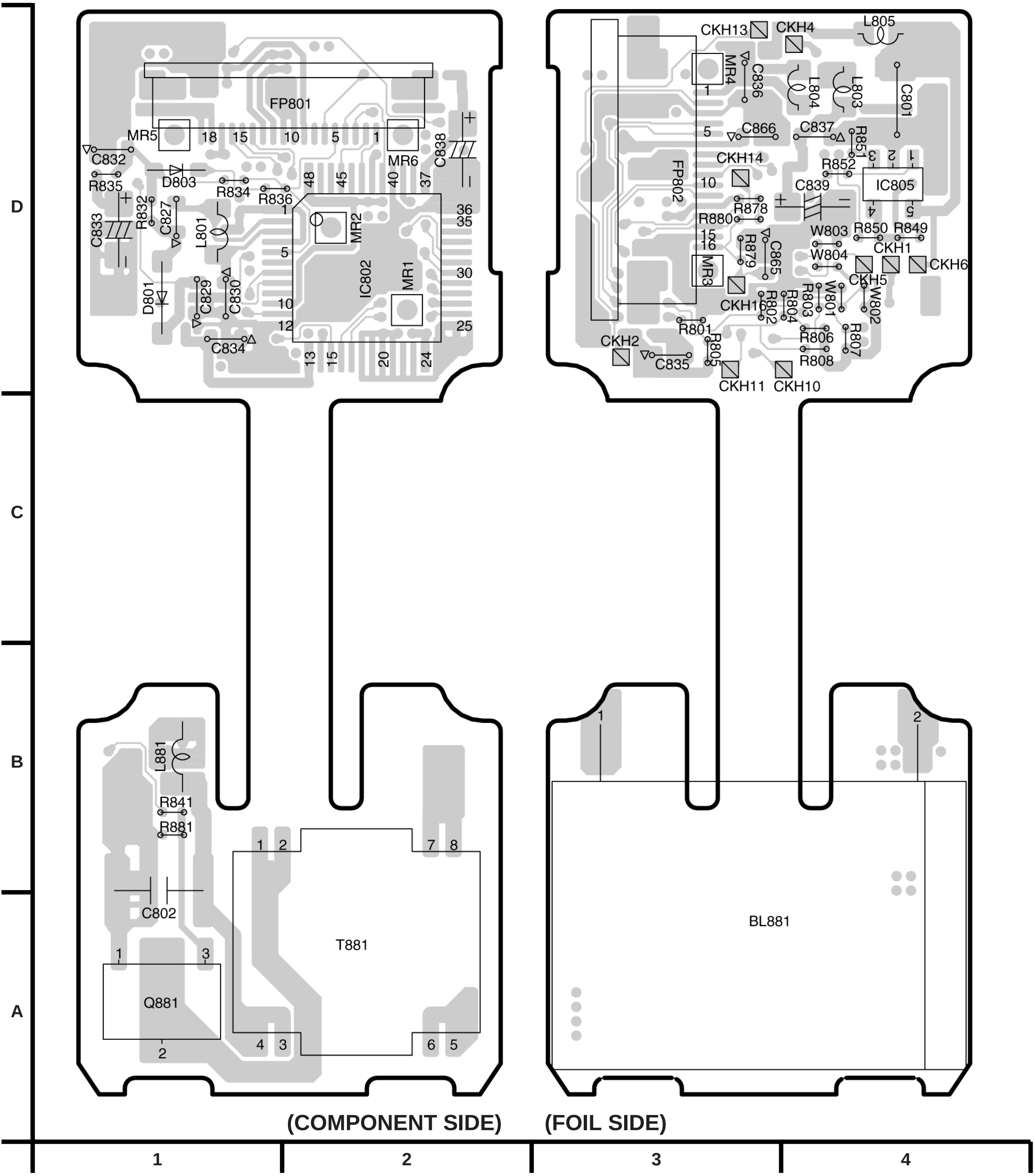
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C2223	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C2224	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C2225	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C2226	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C2227	VCS0JP106	E.CAPACITOR 6.3V 10U	1	
C2233	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
FP2201	VJS4273B018	CONNECTOR (FEMALE) 18P	1	
FP2202	VJS4036B010	CONNECTOR (FEMALE) 10P	1	
FP2203	VJS4298B018	CONNECTOR (FEMALE) 18P	1	
IC2201	TB6534F	IC	1	
IC2202	UN224	TRANSISTOR-RESISTOR	1	
IC2203	UN224	TRANSISTOR-RESISTOR	1	
PP2201	VJP4288B040	CONNECTOR (MALE) 40P	1	
R2201	ERJ2GEJ224	M.RESISTOR CH 1/16W 220K	1	
R2202	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R2203	ERJ2GEJ224	M.RESISTOR CH 1/16W 220K	1	
R2204	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R2205	ERJ8RQJR27	M.RESISTOR CH 1/8W 0.27	1	
R2206	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	
R2207	ERJ2GEJ122	M.RESISTOR CH 1/16W 1.2K	1	
R2208	ERJ2GEJ273	M.RESISTOR CH 1/16W 27K	1	
R2209	ERJ2GEJ823	M.RESISTOR CH 1/16W 82K	1	
R2210	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R2211	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R2212	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R2213	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R2216	ERJ8GEYJR33	M.RESISTOR CH 1/8W 0.33	1	
R2217	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R2218	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R2227	ERJ2GEJ683	M.RESISTOR CH 1/16W 68K	1	
■	VEP000D0B	MMC/AV JACK C.B.A.		(RTL)
B6101	VSB0407	BATTERY	1	
C4051	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C4052	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
J4051	VJJ0612	AV JACK	1	
LB4051	VLF1143A121	COIL 120UH	1	
R4051	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R6101	ERJ6GEYJ331	M.RESISTOR CH 1/10W 330	1	
VZ4051	VRT0158	TRANSIENT/SURGE ABSORBER	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
		MISCELLANEOUS		
	VMZ2897	JACK BARRIER	1	
■	VEP06D07B	S/S POWER FLEX. CARD C.B.A.		(RTL)
D6101	CL170UR-CD	CHIP LED	1	
D6102	CL170YG-CD	LED	1	
R6101	ERJ6GEY0R00	M.RESISTOR CH 1/10W 0	1	
S6101	VSS0533	SLIDE SWITCH	1	
S6103	VSP0584	SWITCH	1	
S6105	VSP0584	SWITCH	1	
■	VEP22290A	CCD FLEX. CARD C.B.A.		(RTL)
C294	ECST1VX225Z	T.CAPACITOR CH 35V 2.2U	1	
C295	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
D291	MA143	DIODE	1	
PP291	VJP4009C020	CONNECTOR (MALE) 20P	1	
Q291	2SC3930	CHIP TRANSISTOR	1	
R292	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
		MISCELLANEOUS		
	VJB22290	FLEX. CARD	1	
■	VEP000C2A	TOP OPERATION C.B.A.		(RTL)
D6701	CL170YG-CD	LED	1	
FP6701	VJS2533B005	CONNECTOR (FEMALE) 5P	1	
S6701	VSP1102	SWITCH	1	
S6702	VSP1102	SWITCH	1	
S6703	VSS0392	SLIDE SWITCH	1	
S6704	VSR0223	ENCODER SWITCH	1	
■	VEP000C1A	MULTI JACK C.B.A.		(RTL)

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
PS3002	VJS4009A030	CONNECTOR (FEMALE) 30P	1	
PS3003	VJS4024	MULTI JACK	1	
■	VEK8892	LENS FLEX. CARD C.B.A.		(RTL)
		MISCELLANEOUS		
	HT-120B	HALL SENSOR	1	
	VJB20797	FLEX. CARD	1	
■	VEP06D10A	HALL SENSOR FLEX. CARD		(RTL)
IC991	DN8797MSC	IC	1	
IC992	DN8797MSC	IC	1	

E.V.F. C.B.A.									
Integrated Circuit		**Coil**		C802	A-1	C865	D-3	R834	D-1
IC802	D-2	L801	D-1	C827	D-1	C866	D-3	R835	D-1
IC805	D-4	L803	D-4	C829	D-1	**Resistor**		R836	D-1
Transistor		L804	D-4	C830	D-1	R801	D-3	R841	B-1
Q881	A-1	L805	D-4	C832	D-1	R802	D-3	R849	D-4
Connector		L881	B-1	C833	D-1	R803	D-4	R850	D-4
FP801	D-2	**Transformer**		C834	D-1	R804	D-4	R851	D-4
FP802	D-3	T881	A-2	C835	D-3	R805	D-3	R852	D-4
Diode		**Back Light**		C836	D-3	R806	D-4	R878	D-3
D801	D-1	BL881	A-3	C837	D-4	R807	D-4	R879	D-3
D803	D-1	**Capacitor**		C838	D-2	R808	D-4	R880	D-3
		C801	D-4	C839	D-4	R832	D-1	R881	B-1

NOTE:MULTILAYER C.B.A.
THIS C.B.A. IS Multi-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT-PATTERNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.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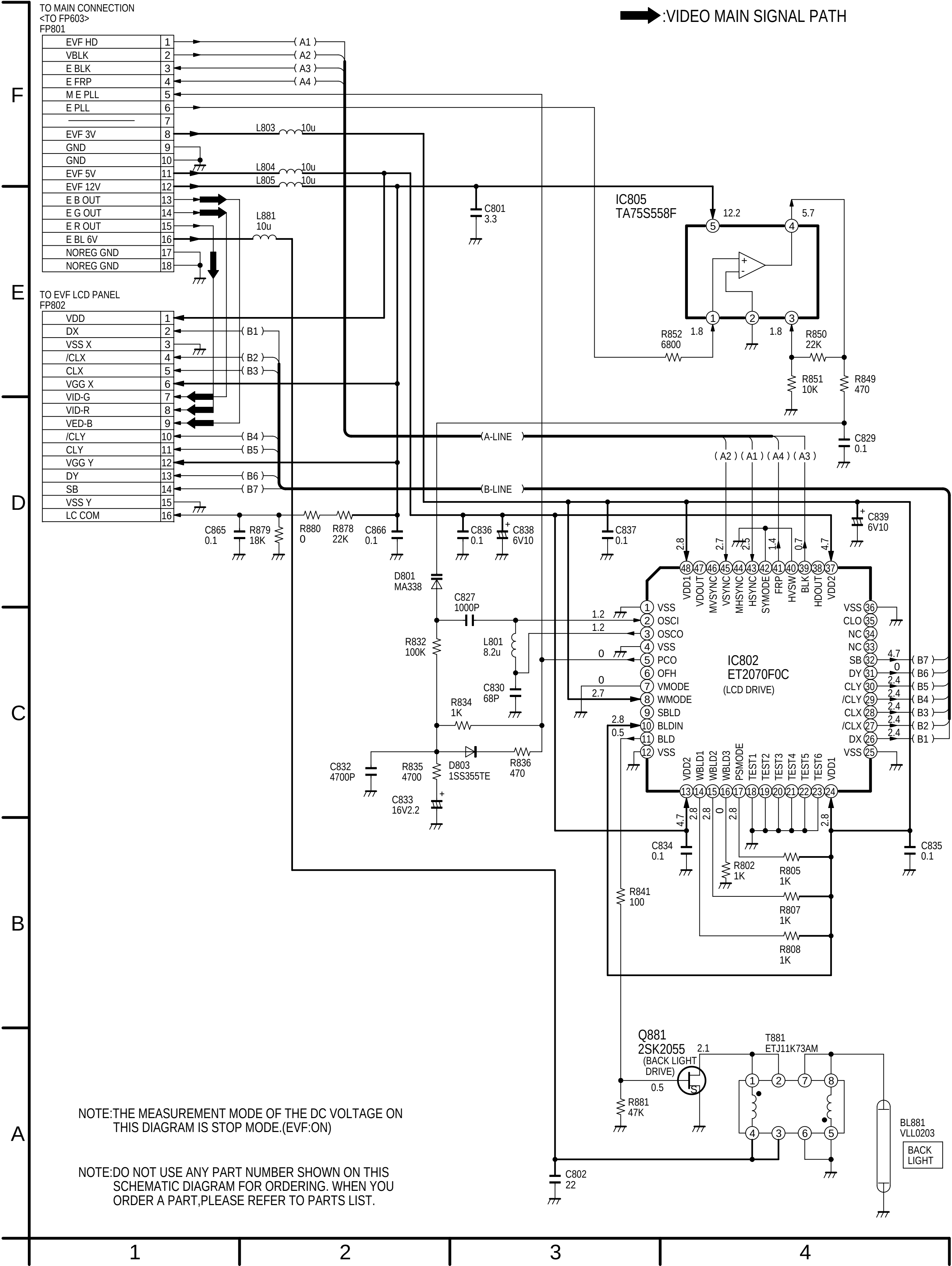
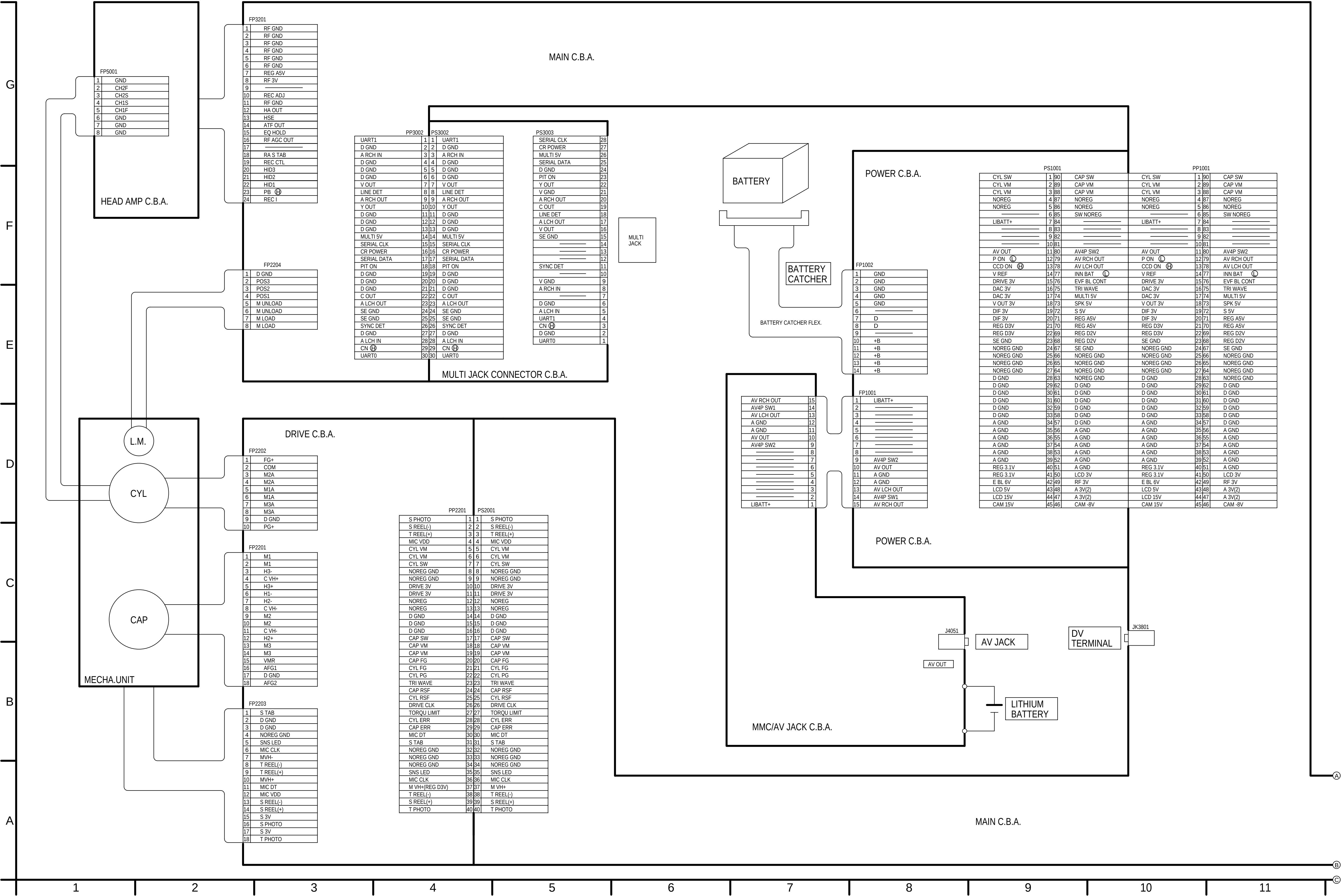
CKH11
CKH10
BL881

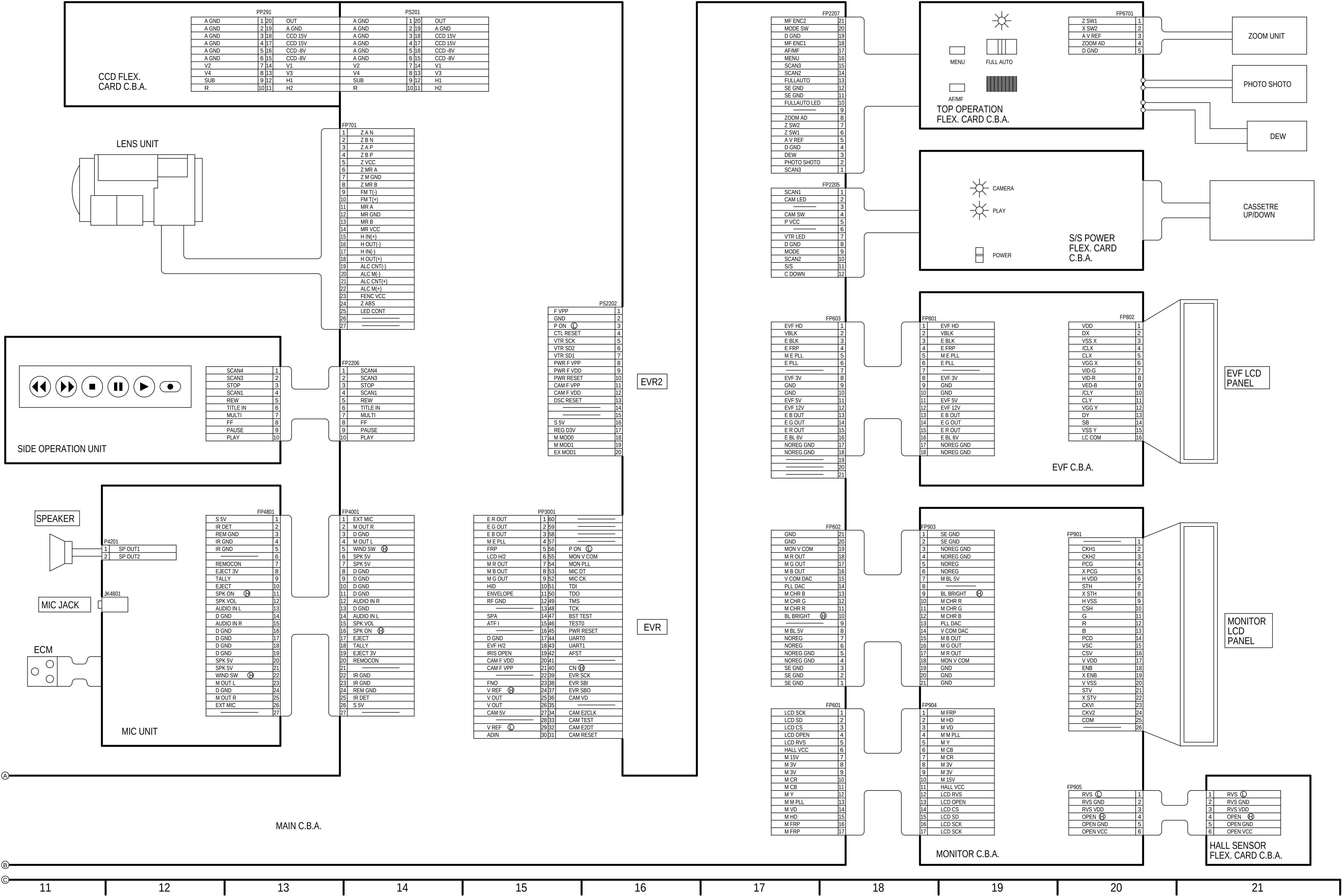
(COMPONENT SIDE) (FOIL SIDE)


:VIDEO MAIN SIGNAL PATH
TO MAIN CONNECTION
<TO FP603>
FP801
EVF HD 1
VBLK 2
E BLK 3
E FRP 4
M E PLL 5
E PLL 6
7
EVF 3V 8
GND 9
GND 10
EVF 5V 11
EVF 12V 12
E B OUT 13
E G OUT 14
E R OUT 15
E BL 6V 16
NOREG GND 17
NOREG GND 18
A1
A2
A3
A4
L803 10u
L804 10u
L805 10u
L881 10u
C801 3.3
IC805
TA75S558F
12.2
5.7
1.8
1.8
R852 6800
R850 22K
R851 10K
R849 470
C829 0.1
TO EVF LCD PANEL
FP802
VDD 1
DX 2
VSS X 3
/CLX 4
CLX 5
VGG X 6
VID-G 7
VID-R 8
VED-B 9
/CLY 10
CLY 11
VGG Y 12
DY 13
SB 14
VSS Y 15
LC COM 16
B1
B2
B3
B4
B5
B6
B7
A-LINE
B-LINE
(A2) (A1) (A4) (A3)
C865 0.1
R879 18K
R880 0
R878 22K
C866 0.1
C836 0.1
C838 6V10
C837 0.1
C839 6V10
D801 MA338
C827 1000P
R832 100K
L801 8.2u
C830 68P
R834 1K
C832 4700P
R835 4700
D803 1SS355TE
R836 470
C833 16V2.2
IC802
ET2070F0C
(LCD DRIVE)
VDD1 VDOUT MVSYNC VSYNC MHSYNC HSYNC SYMODE FRP HVSW BLK HDOUT VDD2
48 47 46 45 44 43 42 41 40 39 38 37
2.8 2.7 2.5 1.4 0.7 4.7
1 VSS
2 OSCI 1.2
3 OSCO 1.2
4 VSS
5 PCO 0
6 OFH
7 VMODE 0
8 WMODE 2.7
9 SBLD
10 BLDIN 2.8
11 BLD 0.5
12 VSS
VSS 36
CLO 35
NC 34
NC 33
SB 32 4.7
DY 31 0
CLY 30 2.4
/CLY 29 2.4
CLX 28 2.4
/CLX 27 2.4
DX 26 2.4
VSS 25
VDD2 WBLD1 WBLD2 WBLD3 PSMODE TEST1 TEST2 TEST3 TEST4 TEST5 TEST6 VDD1
13 14 15 16 17 18 19 20 21 22 23 24
4.7 2.8 2.8 0 2.8 2.8
C834 0.1
C835 0.1
R802 1K
R805 1K
R807 1K
R808 1K
R841 100
Q881
2SK2055
(BACK LIGHT DRIVE)
2.1
0.5
S
R881 47K
T881
ETJ11K73AM
1 2 7 8
4 3 6 5
BL881
VLL0203
BACK LIGHT
C802 22
F
E
D
C
B
A
1
2
3
4

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.(EVF:ON)

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.


G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
MAIN C.B.A.
HEAD AMP C.B.A.
FP5001
1 GND
2 CH2F
3 CH2S
4 CH1S
5 CH1F
6 GND
7 GND
8 GND
FP3201
1 RF GND
2 RF GND
3 RF GND
4 RF GND
5 RF GND
6 RF GND
7 REG A5V
8 RF 3V
9 ————
10 REC ADJ
11 RF GND
12 HA OUT
13 HSE
14 ATF OUT
15 EQ HOLD
16 RF AGC OUT
17 ————
18 RA S TAB
19 REC CTL
20 HID3
21 HID2
22 HID1
23 PB Ⓗ
24 REC I
FP2204
1 D GND
2 POS3
3 POS2
4 POS1
5 M UNLOAD
6 M UNLOAD
7 M LOAD
8 M LOAD
PP3002
1 UART1
2 D GND
3 A RCH IN
4 D GND
5 D GND
6 D GND
7 V OUT
8 LINE DET
9 A RCH OUT
10 Y OUT
11 D GND
12 D GND
13 D GND
14 MULTI 5V
15 SERIAL CLK
16 CR POWER
17 SERIAL DATA
18 PIT ON
19 D GND
20 D GND
21 D GND
22 C OUT
23 A LCH OUT
24 SE GND
25 SE GND
26 SYNC DET
27 D GND
28 A LCH IN
29 CN Ⓗ
30 UART0
PS3002
1 UART1
2 D GND
3 A RCH IN
4 D GND
5 D GND
6 D GND
7 V OUT
8 LINE DET
9 A RCH OUT
10 Y OUT
11 D GND
12 D GND
13 D GND
14 MULTI 5V
15 SERIAL CLK
16 CR POWER
17 SERIAL DATA
18 PIT ON
19 D GND
20 D GND
21 D GND
22 C OUT
23 A LCH OUT
24 SE GND
25 SE GND
26 SYNC DET
27 D GND
28 A LCH IN
29 CN Ⓗ
30 UART0
PS3003
28 SERIAL CLK
27 CR POWER
26 MULTI 5V
25 SERIAL DATA
24 D GND
23 PIT ON
22 Y OUT
21 V GND
20 A RCH OUT
19 C OUT
18 LINE DET
17 A LCH OUT
16 V OUT
15 SE GND
14 ————
13 ————
12 ————
11 SYNC DET
10 ————
9 V GND
8 A RCH IN
7 ————
6 D GND
5 A LCH IN
4 UART1
3 CN Ⓗ
2 D GND
1 UART0
MULTI JACK CONNECTOR C.B.A.
MULTI JACK
BATTERY
BATTERY CATCHER
BATTERY CATCHER FLEX.
POWER C.B.A.
FP1002
1 GND
2 GND
3 GND
4 GND
5 GND
6 ————
7 D
8 D
9 ————
10 +B
11 +B
12 +B
13 +B
14 +B
PS1001
1 CYL SW / 90 CAP SW
2 CYL VM / 89 CAP VM
3 CYL VM / 88 CAP VM
4 NOREG / 87 NOREG
5 NOREG / 86 NOREG
6 ———— / 85 SW NOREG
7 LIBATT+ / 84 ————
8 ———— / 83 ————
9 ———— / 82 ————
10 ———— / 81 ————
11 AV OUT / 80 AV4P SW2
12 P ON Ⓛ / 79 AV RCH OUT
13 CCD ON Ⓗ / 78 AV LCH OUT
14 V REF / 77 INN BAT Ⓛ
15 DRIVE 3V / 76 EVF BL CONT
16 DAC 3V / 75 TRI WAVE
17 DAC 3V / 74 MULTI 5V
18 V OUT 3V / 73 SPK 5V
19 DIF 3V / 72 S 5V
20 DIF 3V / 71 REG A5V
21 REG D3V / 70 REG A5V
22 REG D3V / 69 REG D2V
23 SE GND / 68 REG D2V
24 NOREG GND / 67 SE GND
25 NOREG GND / 66 NOREG GND
26 NOREG GND / 65 NOREG GND
27 NOREG GND / 64 NOREG GND
28 D GND / 63 NOREG GND
29 D GND / 62 D GND
30 D GND / 61 D GND
31 D GND / 60 D GND
32 D GND / 59 D GND
33 D GND / 58 D GND
34 A GND / 57 D GND
35 A GND / 56 A GND
36 A GND / 55 A GND
37 A GND / 54 A GND
38 A GND / 53 A GND
39 A GND / 52 A GND
40 REG 3.1V / 51 A GND
41 REG 3.1V / 50 LCD 3V
42 E BL 6V / 49 RF 3V
43 LCD 5V / 48 A 3V(2)
44 LCD 15V / 47 A 3V(2)
45 CAM 15V / 46 CAM -8V
PP1001
1 CYL SW / 90 CAP SW
2 CYL VM / 89 CAP VM
3 CYL VM / 88 CAP VM
4 NOREG / 87 NOREG
5 NOREG / 86 NOREG
6 ———— / 85 SW NOREG
7 LIBATT+ / 84 ————
8 ———— / 83 ————
9 ———— / 82 ————
10 ———— / 81 ————
11 AV OUT / 80 AV4P SW2
12 P ON Ⓛ / 79 AV RCH OUT
13 CCD ON Ⓗ / 78 AV LCH OUT
14 V REF / 77 INN BAT Ⓛ
15 DRIVE 3V / 76 EVF BL CONT
16 DAC 3V / 75 TRI WAVE
17 DAC 3V / 74 MULTI 5V
18 V OUT 3V / 73 SPK 5V
19 DIF 3V / 72 S 5V
20 DIF 3V / 71 REG A5V
21 REG D3V / 70 REG A5V
22 REG D3V / 69 REG D2V
23 SE GND / 68 REG D2V
24 NOREG GND / 67 SE GND
25 NOREG GND / 66 NOREG GND
26 NOREG GND / 65 NOREG GND
27 NOREG GND / 64 NOREG GND
28 D GND / 63 NOREG GND
29 D GND / 62 D GND
30 D GND / 61 D GND
31 D GND / 60 D GND
32 D GND / 59 D GND
33 D GND / 58 D GND
34 A GND / 57 D GND
35 A GND / 56 A GND
36 A GND / 55 A GND
37 A GND / 54 A GND
38 A GND / 53 A GND
39 A GND / 52 A GND
40 REG 3.1V / 51 A GND
41 REG 3.1V / 50 LCD 3V
42 E BL 6V / 49 RF 3V
43 LCD 5V / 48 A 3V(2)
44 LCD 15V / 47 A 3V(2)
45 CAM 15V / 46 CAM -8V
FP1001
1 LIBATT+
2 ————
3 ————
4 ————
5 ————
6 ————
7 ————
8 ————
9 AV4P SW2
10 AV OUT
11 A GND
12 A GND
13 AV LCH OUT
14 AV4P SW1
15 AV RCH OUT
AV RCH OUT 15
AV4P SW1 14
AV LCH OUT 13
A GND 12
A GND 11
AV OUT 10
AV4P SW2 9
———— 8
———— 7
———— 6
———— 5
———— 4
———— 3
———— 2
LIBATT+ 1
POWER C.B.A.
J4051
AV JACK
AV OUT
DV TERMINAL
JK3801
LITHIUM BATTERY
MMC/AV JACK C.B.A.
DRIVE C.B.A.
FP2202
1 FG+
2 COM
3 M2A
4 M2A
5 M1A
6 M1A
7 M3A
8 M3A
9 D GND
10 PG+
FP2201
1 M1
2 M1
3 H3-
4 C VH+
5 H3+
6 H1-
7 H2-
8 C VH-
9 M2
10 M2
11 C VH-
12 H2+
13 M3
14 M3
15 VMR
16 AFG1
17 D GND
18 AFG2
FP2203
1 S TAB
2 D GND
3 D GND
4 NOREG GND
5 SNS LED
6 MIC CLK
7 MVH-
8 T REEL(-)
9 T REEL(+)
10 MVH+
11 MIC DT
12 MIC VDD
13 S REEL(-)
14 S REEL(+)
15 S 3V
16 S PHOTO
17 S 3V
18 T PHOTO
PP2201
1 S PHOTO
2 S REEL(-)
3 T REEL(+)
4 MIC VDD
5 CYL VM
6 CYL VM
7 CYL SW
8 NOREG GND
9 NOREG GND
10 DRIVE 3V
11 DRIVE 3V
12 NOREG
13 NOREG
14 D GND
15 D GND
16 D GND
17 CAP SW
18 CAP VM
19 CAP VM
20 CAP FG
21 CYL FG
22 CYL PG
23 TRI WAVE
24 CAP RSF
25 CYL RSF
26 DRIVE CLK
27 TORQU LIMIT
28 CYL ERR
29 CAP ERR
30 MIC DT
31 S TAB
32 NOREG GND
33 NOREG GND
34 NOREG GND
35 SNS LED
36 MIC CLK
37 M VH+(REG D3V)
38 T REEL(-)
39 S REEL(+)
40 T PHOTO
PS2001
1 S PHOTO
2 S REEL(-)
3 T REEL(+)
4 MIC VDD
5 CYL VM
6 CYL VM
7 CYL SW
8 NOREG GND
9 NOREG GND
10 DRIVE 3V
11 DRIVE 3V
12 NOREG
13 NOREG
14 D GND
15 D GND
16 D GND
17 CAP SW
18 CAP VM
19 CAP VM
20 CAP FG
21 CYL FG
22 CYL PG
23 TRI WAVE
24 CAP RSF
25 CYL RSF
26 DRIVE CLK
27 TORQU LIMIT
28 CYL ERR
29 CAP ERR
30 MIC DT
31 S TAB
32 NOREG GND
33 NOREG GND
34 NOREG GND
35 SNS LED
36 MIC CLK
37 M VH+
38 T REEL(-)
39 S REEL(+)
40 T PHOTO
L.M.
CYL
CAP
MECHA.UNIT
MAIN C.B.A.
Ⓐ
Ⓑ
Ⓒ


CCD FLEX. CARD C.B.A.
PP291
A GND 1 20 OUT
A GND 2 19 A GND
A GND 3 18 CCD 15V
A GND 4 17 CCD 15V
A GND 5 16 CCD -8V
A GND 6 15 CCD -8V
V2 7 14 V1
V4 8 13 V3
SUB 9 12 H1
R 10 11 H2
PS201
A GND 1 20 OUT
A GND 2 19 A GND
A GND 3 18 CCD 15V
A GND 4 17 CCD 15V
A GND 5 16 CCD -8V
A GND 6 15 CCD -8V
V2 7 14 V1
V4 8 13 V3
SUB 9 12 H1
R 10 11 H2
LENS UNIT
FP701
1 Z A N
2 Z B N
3 Z A P
4 Z B P
5 Z VCC
6 Z MR A
7 Z M GND
8 Z MR B
9 FM T(-)
10 FM T(+)
11 MR A
12 MR GND
13 MR B
14 MR VCC
15 H IN(+)
16 H OUT(-)
17 H IN(-)
18 H OUT(+)
19 ALC CNT(-)
20 ALC M(-)
21 ALC CNT(+)
22 ALC M(+)
23 FENC VCC
24 Z ABS
25 LED CONT
26
27
SIDE OPERATION UNIT
SCAN4 1
SCAN3 2
STOP 3
SCAN1 4
REW 5
TITLE IN 6
MULTI 7
FF 8
PAUSE 9
PLAY 10
FP2206
1 SCAN4
2 SCAN3
3 STOP
4 SCAN1
5 REW
6 TITLE IN
7 MULTI
8 FF
9 PAUSE
10 PLAY
PS2202
F VPP 1
GND 2
P ON Ⓛ 3
CTL RESET 4
VTR SCK 5
VTR SD2 6
VTR SD1 7
PWR F VPP 8
PWR F VDD 9
PWR RESET 10
CAM F VPP 11
CAM F VDD 12
DSC RESET 13
14
15
S 5V 16
REG D3V 17
M MOD0 18
M MOD1 19
EX MOD1 20
EVR2
SPEAKER
P4201
1 SP OUT1
2 SP OUT2
MIC JACK
JK4801
ECM
MIC UNIT
FP4801
S 5V 1
IR DET 2
REM GND 3
IR GND 4
IR GND 5
6
REMOCON 7
EJECT 3V 8
TALLY 9
EJECT 10
SPK ON Ⓗ 11
SPK VOL 12
AUDIO IN L 13
D GND 14
AUDIO IN R 15
D GND 16
D GND 17
D GND 18
D GND 19
SPK 5V 20
SPK 5V 21
WIND SW Ⓗ 22
M OUT L 23
D GND 24
M OUT R 25
EXT MIC 26
27
FP4001
1 EXT MIC
2 M OUT R
3 D GND
4 M OUT L
5 WIND SW Ⓗ
6 SPK 5V
7 SPK 5V
8 D GND
9 D GND
10 D GND
11 D GND
12 AUDIO IN R
13 D GND
14 AUDIO IN L
15 SPK VOL
16 SPK ON Ⓗ
17 EJECT
18 TALLY
19 EJECT 3V
20 REMOCON
21
22 IR GND
23 IR GND
24 REM GND
25 IR DET
26 S 5V
27
PP3001
E R OUT 1 60
E G OUT 2 59
E B OUT 3 58
M E PLL 4 57
FRP 5 56 P ON Ⓛ
LCD H/2 6 55 MON V COM
M R OUT 7 54 MON PLL
M B OUT 8 53 MIC DT
M G OUT 9 52 MIC CK
HID 10 51 TDI
ENVELOPE 11 50 TDO
RF GND 12 49 TMS
13 48 TCK
SPA 14 47 BST TEST
ATF I 15 46 TEST0
16 45 PWR RESET
D GND 17 44 UART0
EVF H/2 18 43 UART1
IRIS OPEN 19 42 AFST
CAM F VDD 20 41
CAM F VPP 21 40 CN Ⓗ
22 39 EVR SCK
FNO 23 38 EVR SBI
V REF Ⓗ 24 37 EVR SBO
V OUT 25 36 CAM VD
V OUT 26 35
CAM 5V 27 34 CAM E2CLK
28 33 CAM TEST
V REF Ⓛ 29 32 CAM E2DT
ADIN 30 31 CAM RESET
EVR
MAIN C.B.A.
FP2207
MF ENC2 21
MODE SW 20
D GND 19
MF ENC1 18
AF/MF 17
MENU 16
SCAN3 15
SCAN2 14
FULLAUTO 13
SE GND 12
SE GND 11
FULLAUTO LED 10
9
ZOOM AD 8
Z SW2 7
Z SW1 6
A V REF 5
D GND 4
DEW 3
PHOTO SHOTO 2
SCAN3 1
MENU
FULL AUTO
AF/MF
TOP OPERATION FLEX. CARD C.B.A.
FP6701
Z SW1 1
X SW2 2
A V REF 3
ZOOM AD 4
D GND 5
ZOOM UNIT
PHOTO SHOTO
DEW
FP2205
SCAN1 1
CAM LED 2
3
CAM SW 4
P VCC 5
6
VTR LED 7
D GND 8
MODE 9
SCAN2 10
S/S 11
C DOWN 12
CAMERA
PLAY
POWER
S/S POWER FLEX. CARD C.B.A.
CASSETRE UP/DOWN
FP603
EVF HD 1
VBLK 2
E BLK 3
E FRP 4
M E PLL 5
E PLL 6
7
EVF 3V 8
GND 9
GND 10
EVF 5V 11
EVF 12V 12
E B OUT 13
E G OUT 14
E R OUT 15
E BL 6V 16
NOREG GND 17
NOREG GND 18
19
20
21
FP801
1 EVF HD
2 VBLK
3 E BLK
4 E FRP
5 M E PLL
6 E PLL
7
8 EVF 3V
9 GND
10 GND
11 EVF 5V
12 EVF 12V
13 E B OUT
14 E G OUT
15 E R OUT
16 E BL 6V
17 NOREG GND
18 NOREG GND
FP802
VDD 1
DX 2
VSS X 3
/CLX 4
CLX 5
VGG X 6
VID-G 7
VID-R 8
VED-B 9
/CLY 10
CLY 11
VGG Y 12
DY 13
SB 14
VSS Y 15
LC COM 16
EVF C.B.A.
EVF LCD PANEL
FP602
GND 21
GND 20
MON V COM 19
M R OUT 18
M G OUT 17
M B OUT 16
V COM DAC 15
PLL DAC 14
M CHR B 13
M CHR G 12
M CHR R 11
BL BRIGHT Ⓗ 10
9
M BL 5V 8
NOREG 7
NOREG 6
NOREG GND 5
NOREG GND 4
SE GND 3
SE GND 2
SE GND 1
FP903
1 SE GND
2 SE GND
3 NOREG GND
4 NOREG GND
5 NOREG
6 NOREG
7 M BL 5V
8
9 BL BRIGHT Ⓗ
10 M CHR R
11 M CHR G
12 M CHR B
13 PLL DAC
14 V COM DAC
15 M B OUT
16 M G OUT
17 M R OUT
18 MON V COM
19 GND
20 GND
21 GND
FP901
1
CKH1 2
CKH2 3
PCG 4
X PCG 5
H VDD 6
STH 7
X STH 8
H VSS 9
CSH 10
G 11
R 12
B 13
PCD 14
VSC 15
CSV 16
V VDD 17
ENB 18
X ENB 19
V VSS 20
STV 21
X STV 22
CKVI 23
CKV2 24
COM 25
26
MONITOR LCD PANEL
FP601
LCD SCK 1
LCD SD 2
LCD CS 3
LCD OPEN 4
LCD RVS 5
HALL VCC 6
M 15V 7
M 3V 8
M 3V 9
M CR 10
M CB 11
M Y 12
M M PLL 13
M VD 14
M HD 15
M FRP 16
M FRP 17
FP904
1 M FRP
2 M HD
3 M VD
4 M M PLL
5 M Y
6 M CB
7 M CR
8 M 3V
9 M 3V
10 M 15V
11 HALL VCC
12 LCD RVS
13 LCD OPEN
14 LCD CS
15 LCD SD
16 LCD SCK
17 LCD SCK
MONITOR C.B.A.
FP905
RVS Ⓛ 1
RVS GND 2
RVS VDD 3
OPEN Ⓗ 4
OPEN GND 5
OPEN VCC 6
1 RVS Ⓛ
2 RVS GND
3 RVS VDD
4 OPEN Ⓗ
5 OPEN GND
6 OPEN VCC
HALL SENSOR FLEX. CARD C.B.A.
Ⓐ
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Ⓒ
11
12
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14
15
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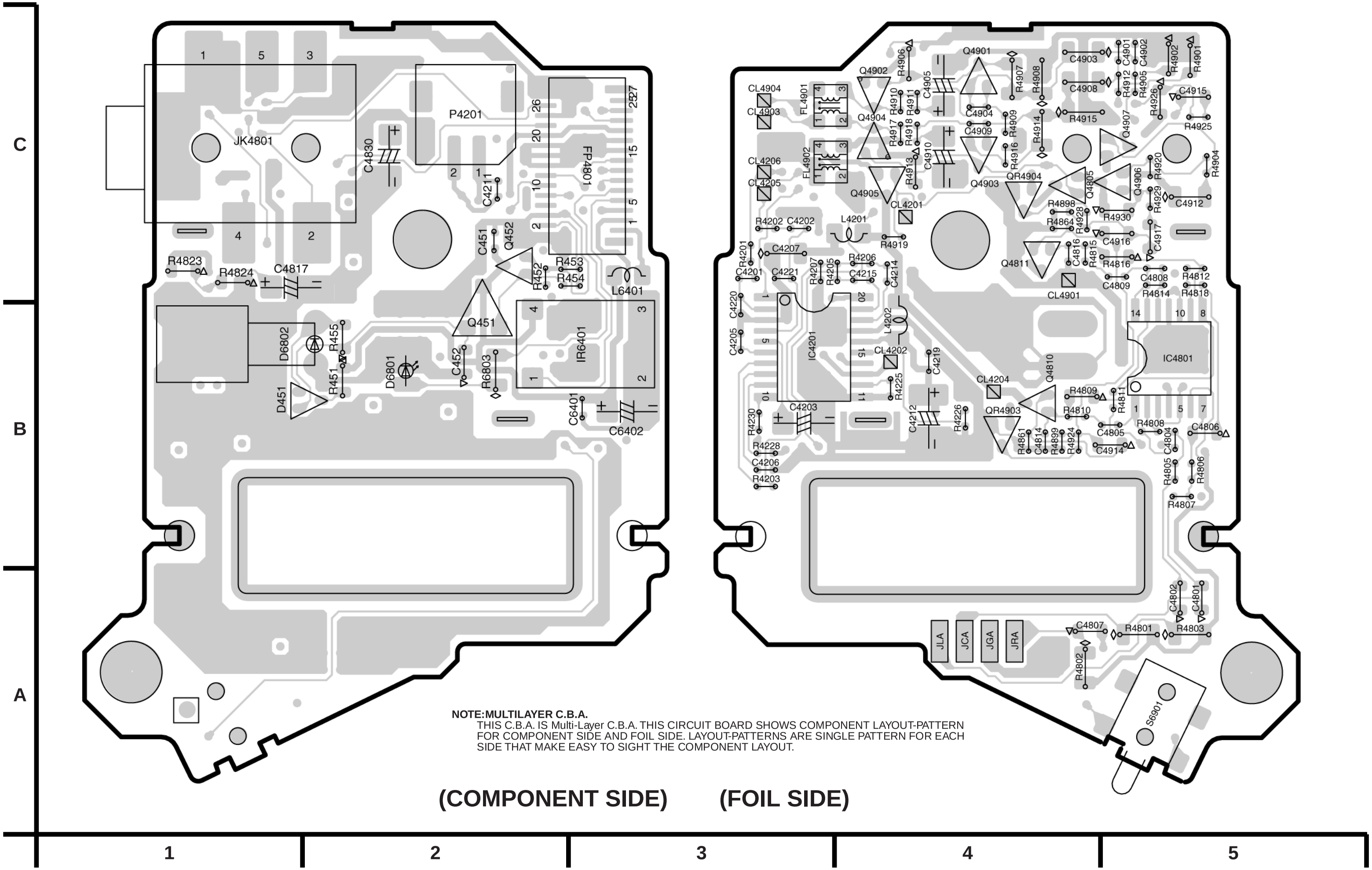
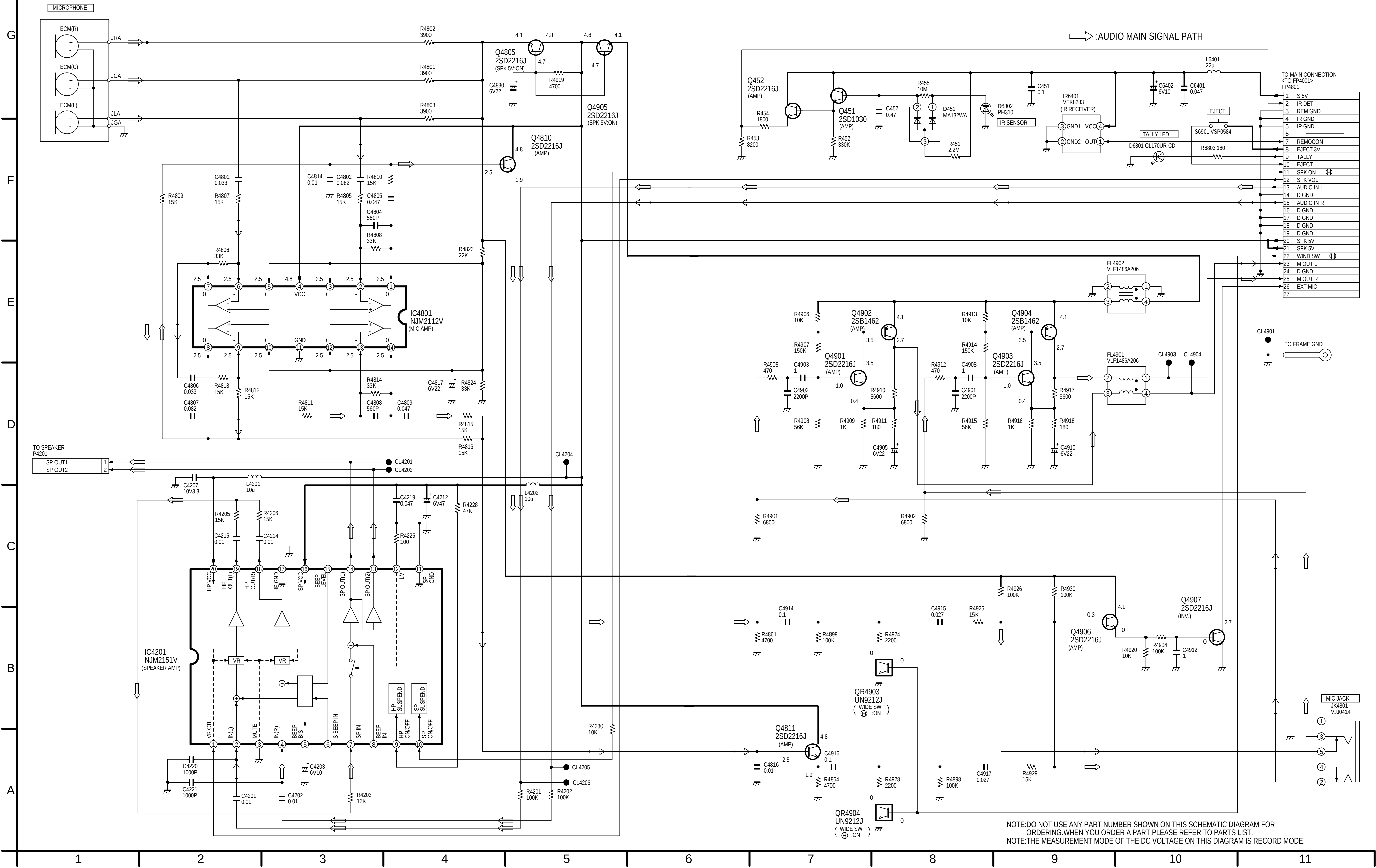
17
18
19
20
21

Mic Unit																									
Integrated Circuit		Q4904	C-4	**Test Point**		D6802	B-1	**Capacitor**		C4215	C-4	C4814	B-4	C4912	C-5	R455	B-2	R4802	A-4	R4816	C-5	R4906	C-4	R4918	C-4
IC4201	B-3	Q4905	C-4	CL4201	C-4	**Filter**		C451	C-2	C4219	B-4	C4816	C-4	C4914	B-4	R4201	C-3	R4803	A-5	R4818	C-5	R4907	C-4	R4919	C-4
IC4801	B-5	Q4906	C-5	CL4202	B-4	FL4901	C-3	C452	B-2	C4220	B-3	C4817	C-1	C4915	C-5	R4202	C-3	R4805	B-5	R4823	C-1	R4908	C-4	R4920	C-5
Transistor		Q4907	C-5	CL4204	B-4	FL4902	C-3	C4201	C-3	C4221	C-3	C4830	C-2	C4916	C-5	R4203	B-3	R4806	B-5	R4824	C-1	R4909	C-4	R4924	B-4
Q451	B-2	**Transistor & Resistor**		CL4205	C-3	**IR**		C4202	C-3	C4801	A-5	C4901	C-5	C4917	C-5	R4205	C-3	R4807	B-5	R4861	B-4	R4910	C-4	R4925	C-5
Q452	C-2	QR4903	B-4	CL4206	C-3	IR6401	B-3	C4203	B-3	C4802	A-5	C4902	C-5	C6401	B-3	R4206	C-4	R4808	B-5	R4864	C-4	R4911	C-4	R4926	C-5
Q4805	C-4	QR4904	C-4	CL4901	C-4	**Coil**		C4205	B-3	C4804	B-5	C4903	C-4	C6402	B-3	R4207	C-3	R4809	B-4	R4898	C-4	R4912	C-5	R4928	C-4
Q4810	B-4	**Connector**		CL4903	C-3	L4201	C-3	C4206	B-3	C4805	B-4	C4904	C-4	**Resistor**		R4225	B-4	R4810	B-4	R4899	B-4	R4913	C-4	R4929	C-5
Q4811	C-4	FP4801	C-3	CL4904	C-3	L4202	B-4	C4207	C-3	C4806	B-5	C4905	C-4	R451	B-2	R4226	B-4	R4811	B-5	R4901	C-5	R4914	C-4	R4930	C-5
Q4901	C-4	JK4801	C-1	**Diode**		L6401	C-3	C4211	C-2	C4807	A-4	C4908	C-4	R452	C-2	R4228	B-3	R4812	C-5	R4902	C-5	R4915	C-4	R6803	B-2
Q4902	C-4	P4201	C-2	D451	B-1	**Switch**		C4212	B-4	C4808	C-5	C4909	C-4	R453	C-2	R4230	B-3	R4814	C-5	R4904	C-5	R4916	C-4		
Q4903	C-4			D6801	B-2	S6901	A-5	C4214	C-4	C4809	C-5	C4910	C-4	R454	C-2	R4801	A-5	R4815	C-4	R4905	C-5	R4917	C-4		


C
B
A
1
2
3
4
5
JK4801
P4201
FP4801
C4830
C4211
C451
Q452
R452
R453
R454
L6401
Q451
IR6401
R4823
R4824
C4817
D6802
R455
R451
D451
D6801
C452
R6803
C6401
C6402
CL4904
CL4903
FL4901
FL4902
CL4206
CL4205
Q4902
Q4904
Q4905
R4906
C4905
C4910
Q4901
C4904
C4909
Q4903
QR4904
R4907
R4908
R4909
R4914
R4915
R4916
C4903
C4908
C4901
C4902
R4912
R4905
R4902
R4901
R4926
C4915
R4925
Q4907
Q4805
Q4906
R4920
R4929
R4904
C4912
R4898
R4864
R4928
R4930
C4916
C4917
Q4811
C4816
R4815
R4816
C4809
CL4901
C4808
R4814
R4812
R4818
IC4801
CL4201
L4201
R4919
R4202
C4202
R4201
C4207
C4201
C4221
R4207
R4205
R4206
C4215
C4214
C4220
C4205
IC4201
L4202
CL4202
C4219
R4225
R4230
C4203
R4228
C4206
R4203
C4212
R4226
CL4204
Q4810
QR4903
R4809
R4810
R4811
R4861
C4814
R4899
R4924
C4805
C4914
R4808
C4804
C4806
R4805
R4806
R4807
C4802
C4801
C4807
R4801
R4803
R4802
JLA
JCA
JGA
JRA
S6901

NOTE:MULTILAYER C.B.A.
THIS C.B.A. IS Multi-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT-PATTERNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.

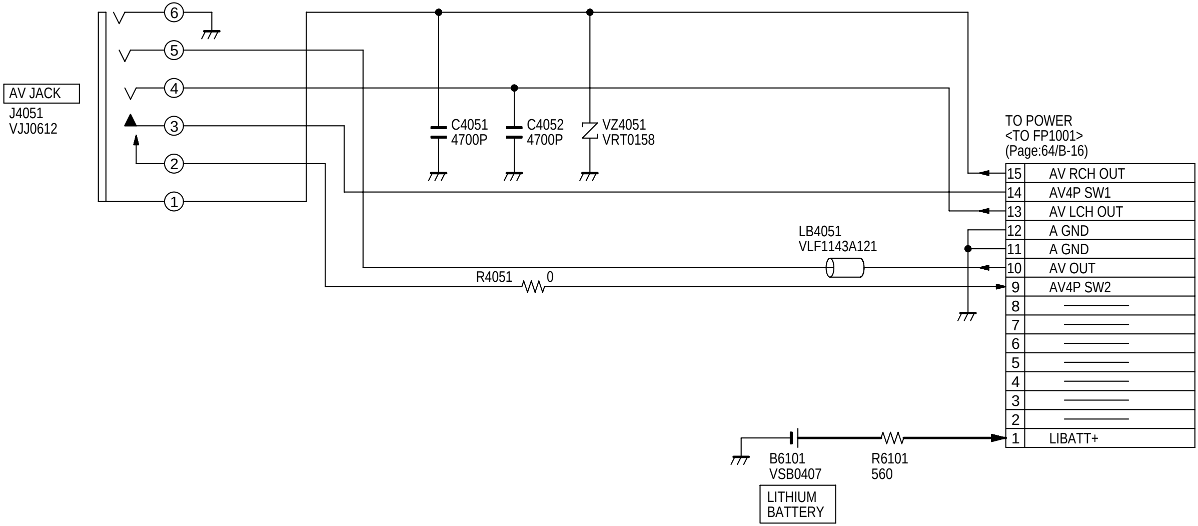
(COMPONENT SIDE) **(FOIL SIDE)**



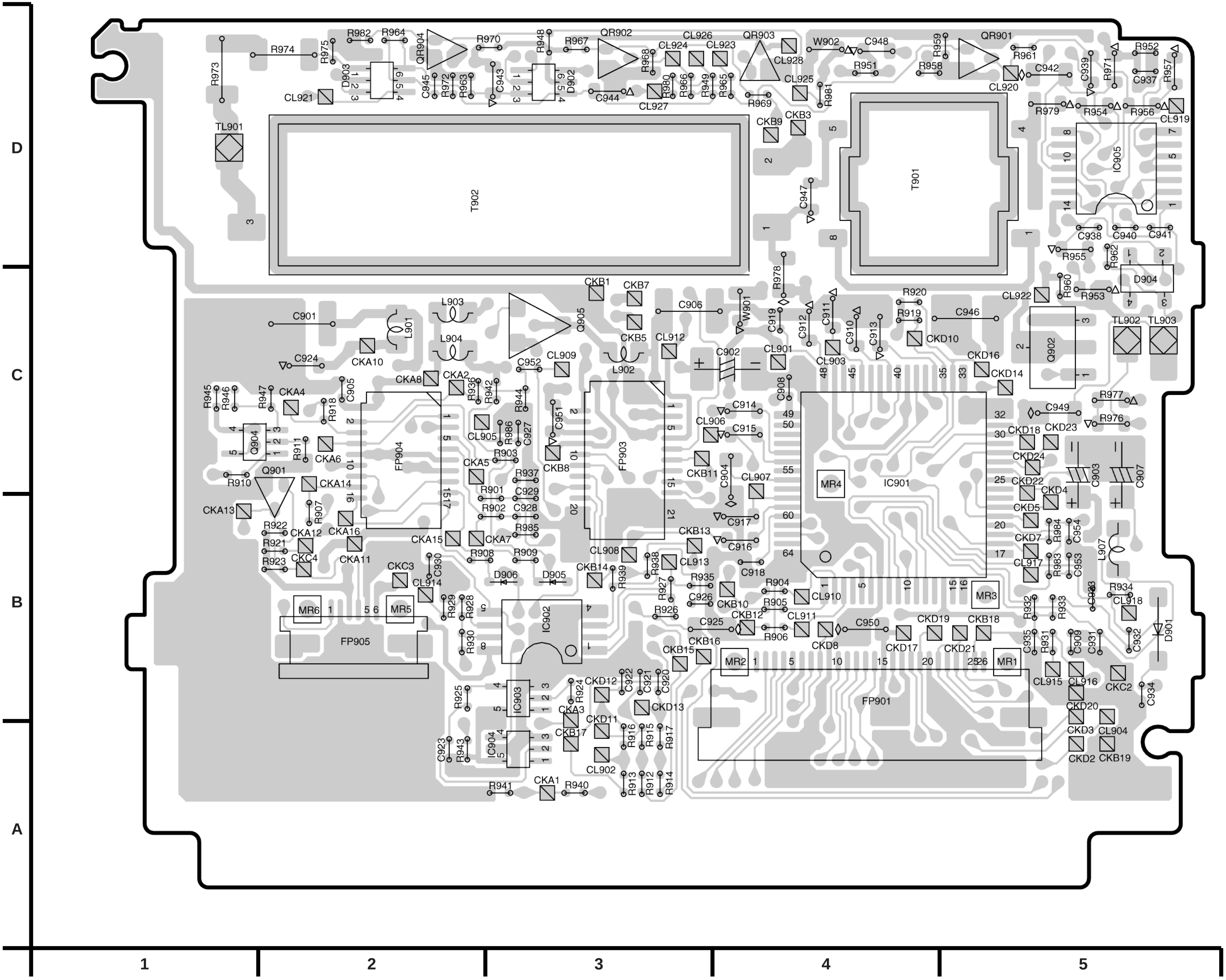
MICROPHONE
ECM(R)
ECM(C)
ECM(L)
JRA
JCA
JLA
JGA
R4802 3900
R4801 3900
R4803 3900
Q4805 2SD2216J (SPK 5V:ON)
C4830 6V22
R4919 4700
Q4905 2SD2216J (SPK 5V:ON)
Q4810 2SD2216J (AMP)
C4801 0.033
R4807 15K
R4809 15K
C4814 0.01
C4802 0.082
R4805 15K
R4810 15K
C4805 0.047
C4804 560P
R4808 33K
R4806 33K
R4823 22K
IC4801 NJM2112V (MIC AMP)
VCC
GND
C4806 0.033
R4818 15K
R4812 15K
C4807 0.082
R4811 15K
R4814 33K
C4808 560P
C4809 0.047
C4817 6V22
R4824 33K
R4815 15K
R4816 15K
TO SPEAKER P4201
SP OUT1
SP OUT2
CL4201
CL4202
CL4204
C4207 10V3.3
L4201 10u
L4202 10u
R4205 15K
R4206 15K
C4215 0.01
C4214 0.01
C4219 0.047
C4212 6V47
R4228 47K
R4225 100
IC4201 NJM2151V (SPEAKER AMP)
HP VCC
HP OUT(L)
HP OUT(R)
HP GND
SP VCC
BEEP LEVEL
SP OUT(1)
SP OUT(2)
LM
SP GND
VR
VR CTL
IN(L)
MUTE
IN(R)
BEEP BIS
S BEEP IN
SP IN
BEEP IN
HP ON/OFF
SP ON/OFF
HP SUSPEND
SP SUSPEND
C4220 1000P
C4221 1000P
C4203 6V10
C4201 0.01
C4202 0.01
R4203 12K
R4230 10K
CL4205
CL4206
R4201 100K
R4202 100K
:AUDIO MAIN SIGNAL PATH
Q452 2SD2216J (AMP)
R454 1800
R453 8200
Q451 2SD1030 (AMP)
R452 330K
C452 0.47
R455 10M
D451 MA132WA
R451 2.2M
D6802 PH310
IR SENSOR
C451 0.1
IR6401 VEK8283 (IR RECEIVER)
GND1 VCC
GND2 OUT
L6401 22u
C6402 6V10
C6401 0.047
EJECT
S6901 VSP0584
TALLY LED
D6801 CL170UR-CD
R6803 180
TO MAIN CONNECTION <TO FP4001> FP4801
1 S 5V
2 IR DET
3 REM GND
4 IR GND
5 IR GND
6
7 REMOCON
8 EJECT 3V
9 TALLY
10 EJECT
11 SPK ON Ⓗ
12 SPK VOL
13 AUDIO IN L
14 D GND
15 AUDIO IN R
16 D GND
17 D GND
18 D GND
19 D GND
20 SPK 5V
21 SPK 5V
22 WIND SW Ⓗ
23 M OUT L
24 D GND
25 M OUT R
26 EXT MIC
27
FL4902 VLF1486A206
R4906 10K
Q4902 2SB1462 (AMP)
R4907 150K
Q4901 2SD2216J (AMP)
R4905 470
C4903 1
C4902 2200P
R4910 5600
R4908 56K
R4909 1K
R4911 180
C4905 6V22
R4913 10K
Q4904 2SB1462 (AMP)
R4914 150K
Q4903 2SD2216J (AMP)
R4912 470
C4908 1
C4901 2200P
R4917 5600
R4915 56K
R4916 1K
R4918 180
C4910 6V22
FL4901 VLF1486A206
CL4903
CL4904
CL4901
TO FRAME GND
R4901 6800
R4902 6800
R4926 100K
R4930 100K
C4914 0.1
C4915 0.027
R4925 15K
R4861 4700
R4899 100K
R4924 2200
QR4903 UN9212J (WIDE SW Ⓗ :ON)
Q4906 2SD2216J (AMP)
R4920 10K
R4904 100K
C4912 1
Q4907 2SD2216J (INV.)
Q4811 2SD2216J (AMP)
C4816 0.01
C4916 0.1
R4864 4700
R4928 2200
R4898 100K
C4917 0.027
R4929 15K
QR4904 UN9212J (WIDE SW Ⓗ :ON)
MIC JACK JK4801 VJJ0414
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS RECORD MODE.


AV JACK
J4051
VJJ0612
6
5
4
3
2
1
C4051
4700P
C4052
4700P
VZ4051
VRT0158
TO POWER
<TO FP1001>
(Page:64/B-16)
15 AV RCH OUT
14 AV4P SW1
13 AV LCH OUT
12 A GND
11 A GND
10 AV OUT
9 AV4P SW2
8
7
6
5
4
3
2
1 LIBATT+
LB4051
VLF1143A121
R4051
0
B6101
VSB0407
LITHIUM
BATTERY
R6101
560
C
B
A
1
2
3
4

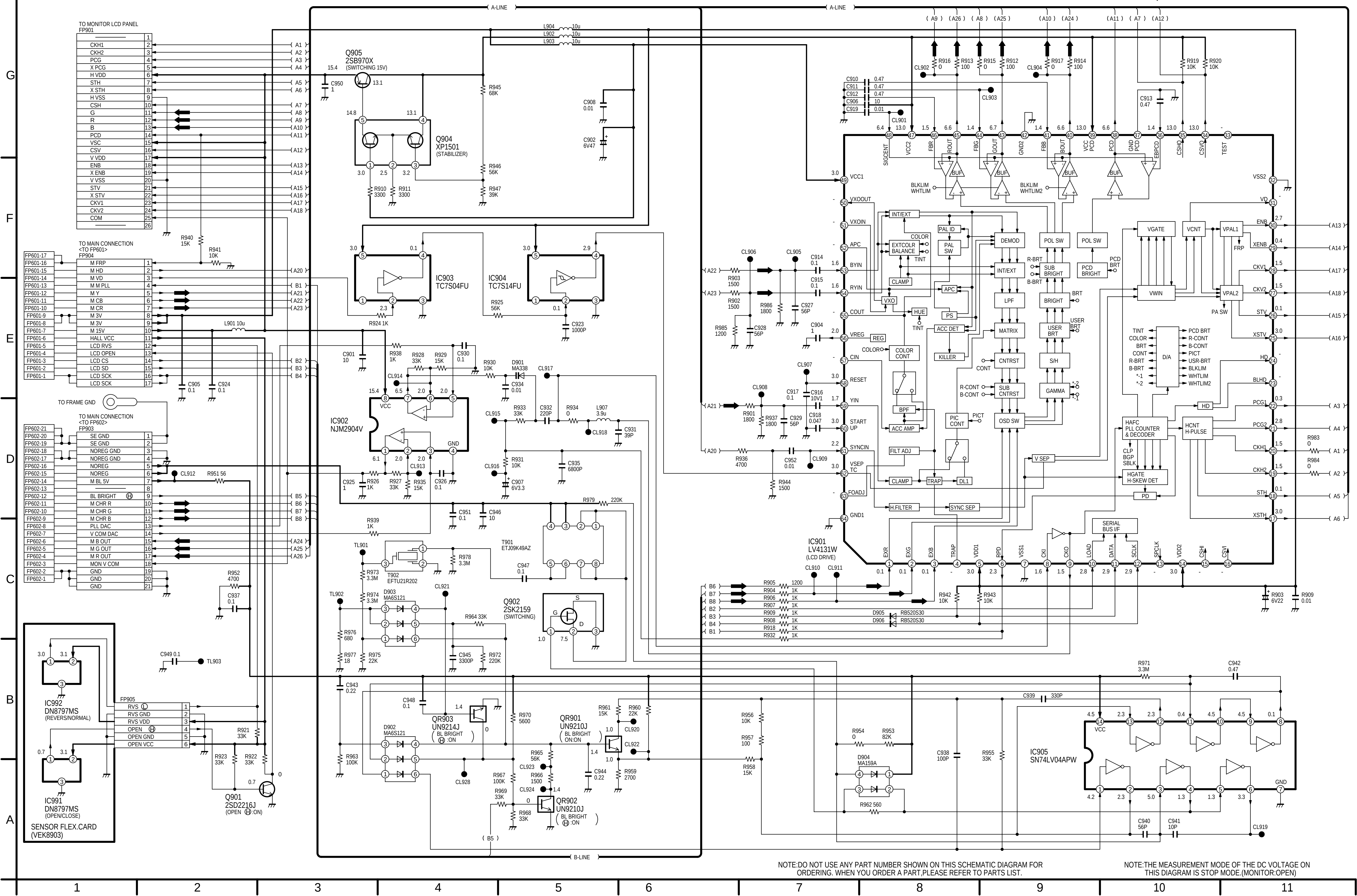
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.


D
C
B
A
1
2
3
4
5
T902
T901
IC905
IC901
IC902
IC903
IC904
FP901
FP903
FP904
FP905
Q901
Q902
Q904
Q905
QR901
QR902
QR903
QR904
D901
D902
D903
D904
D905
D906
TL901
TL902
TL903
L901
L902
L903
L904
L907
W901
W902
MR1
MR2
MR3
MR4
MR5
MR6
R973
R974
R975
R982
R964
R970
R948
R967
R968
R980
R966
R949
R965
R969
R981
R951
R958
R959
R961
R971
R952
R957
R979
R954
R956
R955
R962
R960
R953
R978
R920
R919
R977
R976
R945
R946
R947
R918
R911
R910
R907
R922
R921
R923
R936
R942
R944
R986
R903
R937
R901
R902
R985
R908
R909
R929
R928
R930
R925
R943
R924
R941
R940
R913
R912
R914
R916
R915
R917
R939
R938
R927
R926
R935
R904
R905
R906
R984
R983
R932
R933
R931
R934
R972
R963
C945
C943
C944
C948
C942
C939
C937
C938
C940
C941
C947
C901
C924
C905
C906
C919
C912
C911
C910
C913
C946
C902
C908
C914
C915
C904
C917
C916
C918
C952
C951
C927
C929
C928
C930
C926
C925
C950
C922
C921
C920
C923
C949
C903
C907
C954
C953
C933
C932
C935
C909
C931
C934
CL901
CL902
CL903
CL904
CL905
CL906
CL907
CL908
CL909
CL910
CL911
CL912
CL913
CL914
CL915
CL916
CL917
CL918
CL919
CL920
CL921
CL922
CL923
CL924
CL925
CL926
CL927
CL928
CKA1
CKA2
CKA3
CKA4
CKA5
CKA6
CKA7
CKA8
CKA10
CKA11
CKA12
CKA13
CKA14
CKA15
CKA16
CKB1
CKB3
CKB5
CKB7
CKB8
CKB9
CKB10
CKB11
CKB12
CKB13
CKB14
CKB15
CKB16
CKB17
CKB18
CKB19
CKC2
CKC3
CKC4
CKD2
CKD3
CKD4
CKD5
CKD7
CKD8
CKD10
CKD11
CKD12
CKD13
CKD14
CKD16
CKD17
CKD18
CKD19
CKD20
CKD21
CKD22
CKD23
CKD24

Monitor C.B.A

Integrated Circuit	
IC901	C-4
IC902	B-3
IC903	B-3
IC904	A-3
IC905	D-5
Transistor	
Q901	B-2
Q902	C-5
Q904	C-1
Q905	C-3
Transistor & Resistor	
QR901	D-5
QR902	D-3
QR903	D-4
QR904	D-2
Connector	
FP901	B-4
FP903	C-3
FP904	C-2
FP905	B-2
Test Point	
CL901	C-4
CL902	A-3
CL903	C-4
CL904	B-5
CL905	C-2
CL906	C-3
CL907	B-4
CL908	B-3
CL909	C-3
CL910	B-4
CL911	B-4
CL912	C-3
CL913	B-3
CL914	B-2
CL915	B-5
CL916	B-5
CL917	B-5
CL918	B-5
CL919	D-5
CL920	D-5
CL921	D-2
CL922	C-5
CL923	D-4
CL924	D-3
CL925	D-4
CL926	D-3
CL927	D-3
CL928	D-4

:VIDEO MAIN SIGNAL PATH


TO MONITOR LCD PANEL
FP901
CKH1
CKH2
PCG
X PCG
H VDD
STH
X STH
H VSS
CSH
G
R
B
PCD
VSC
CSV
V VDD
ENB
X ENB
V VSS
STV
X STV
CKV1
CKV2
COM
TO MAIN CONNECTION
<TO FP601>
FP904
M FRP
M HD
M VD
M M PLL
M Y
M CB
M CR
M 3V
M 15V
HALL VCC
LCD RVS
LCD OPEN
LCD CS
LCD SD
LCD SCK
TO FRAME GND
TO MAIN CONNECTION
<TO FP602>
FP903
SE GND
NOREG GND
NOREG
M BL 5V
BL BRIGHT
M CHR R
M CHR G
M CHR B
PLL DAC
V COM DAC
M B OUT
M G OUT
M R OUT
MON V COM
GND
IC992
DN8797MS
(REVERS/NORMAL)
IC991
DN8797MS
(OPEN/CLOSE)
SENSOR FLEX.CARD
(VEK8903)
FP905
RVS
RVS GND
RVS VDD
OPEN
OPEN GND
OPEN VCC
Q901
2SD2216J
(OPEN H:ON)
A-LINE
B-LINE
Q905
2SB970X
(SWITCHING 15V)
Q904
XP1501
(STABILIZER)
IC903
TC7S04FU
IC904
TC7S14FU
IC902
NJM2904V
T901
ETJ09K49AZ
T902
EFTU21R202
Q902
2SK2159
(SWITCHING)
QR903
UN9214J
BL BRIGHT
H:ON
QR901
UN9210J
BL BRIGHT
ON:ON
QR902
UN9210J
BL BRIGHT
H:ON
D901 MA338
D902 MA6S121
D903 MA6S121
D904 MA159A
D905 RB520S30
D906 RB520S30
IC901
LV4131W
(LCD DRIVE)
VCC1
VXOOUT
VXOIN
APC
BYIN
RYIN
COUT
VREG
CIN
RESET
YIN
START UP
SYNCIN
VSEP TC
FOADJ
GND1
SIGCENT
VCC2
FBR
ROUT
FBG
GOUT
GND2
FBB
BOUT
VCC PCD
PCD
GND PCD
EBPCD
CSHO
CSVO
TEST
VSS2
VD
ENB
XENB
CKV1
CKV2
STV
XSTV
HD
BLHD
PCG1
PCG2
CKH1
CKH2
STH
XSTH
EXR
EXG
EXB
TRAP
VDD1
RPD
VSS1
CKI
CKO
LOAD
DATA
SCLK
SPCLK
VDD2
CSHI
CSVI
INT/EXT
EXTCOLR BALANCE
PAL ID
PAL SW
DEMOD
POL SW
CLAMP
APC
VXO
HUE
PS
ACC DET
KILLER
COLOR CONT
BPF
ACC AMP
FILT ADJ
TRAP
DL1
H.FILTER
SYNC SEP
V SEP
SUB BRIGHT
BRIGHT
USER BRT
S/H
GAMMA
PCD BRIGHT
LPF
MATRIX
CNTRST
SUB CNTRST
OSD SW
PIC CONT
BLKLIM
WHTLIM
BLKLIM
WHTLIM2
BUF
VGATE
VCNT
VPAL1
VPAL2
VWIN
FRP
PA SW
D/A
TINT
COLOR
BRT
CONT
R-BRT
B-BRT
PCD BRT
R-CONT
B-CONT
PICT
USR-BRT
WHTLIM
WHTLIM2
HAFC
PLL COUNTER
& DECODER
HCNT
H-PULSE
CLP
BGP
SBLK
HGATE
H-SKEW DET
PD
SERIAL
BUS I/F
IC905
SN74LV04APW
VCC
GND
1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

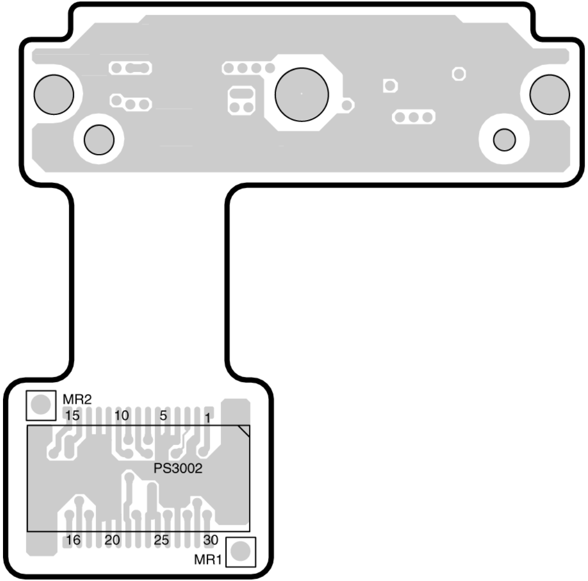
NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.(MONITOR:OPEN)

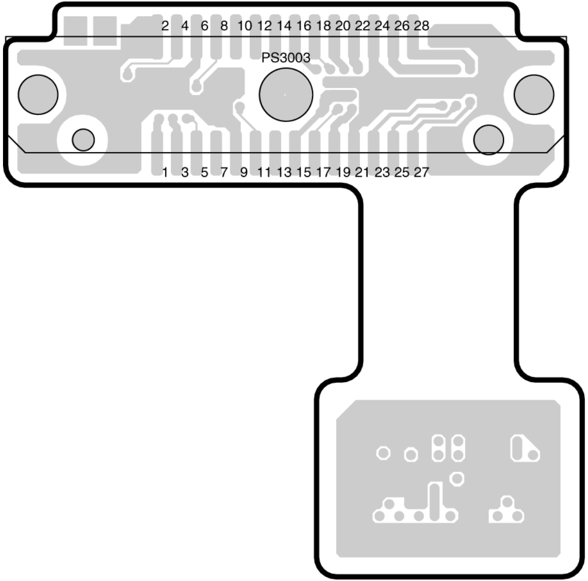
C

NOTE:MULTILAYER C.B.A.

THIS C.B.A. IS Multi-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT-PATTERNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.

B

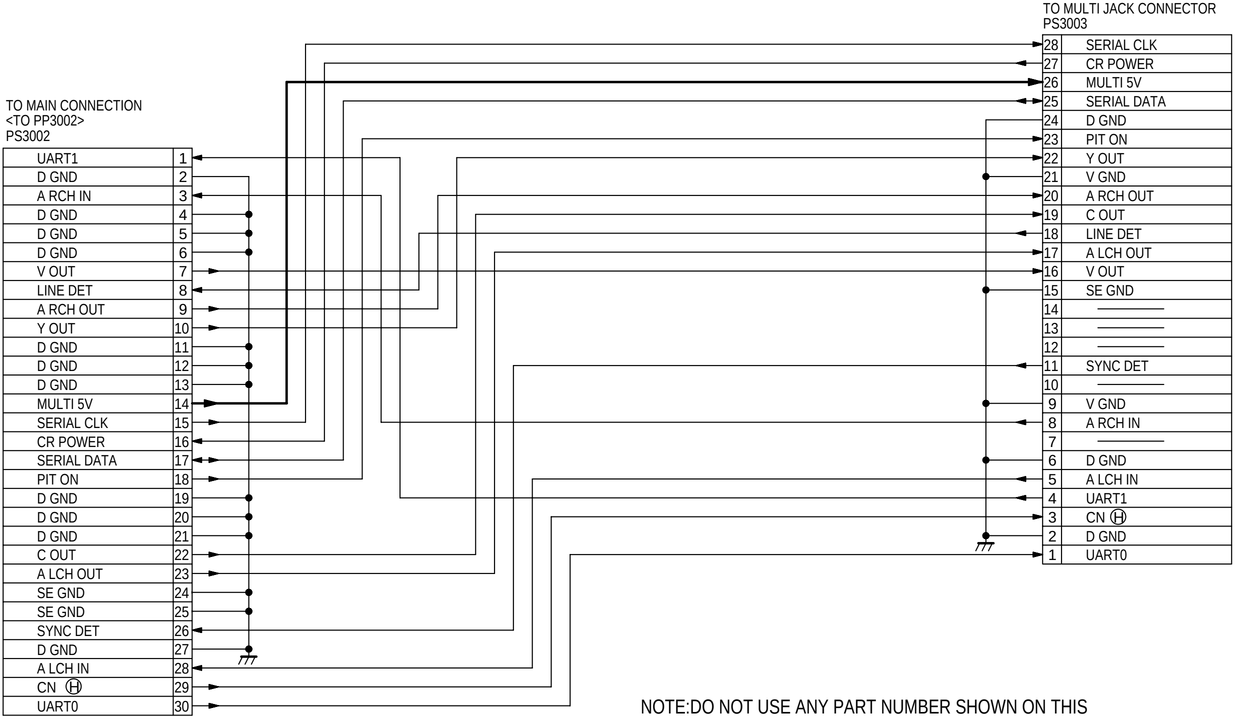

MR2
15
10
5
1
PS3002
16
20
25
30
MR1


2 4 6 8 10 12 14 16 18 20 22 24 26 28
PS3003
1 3 5 7 9 11 13 15 17 19 21 23 25 27

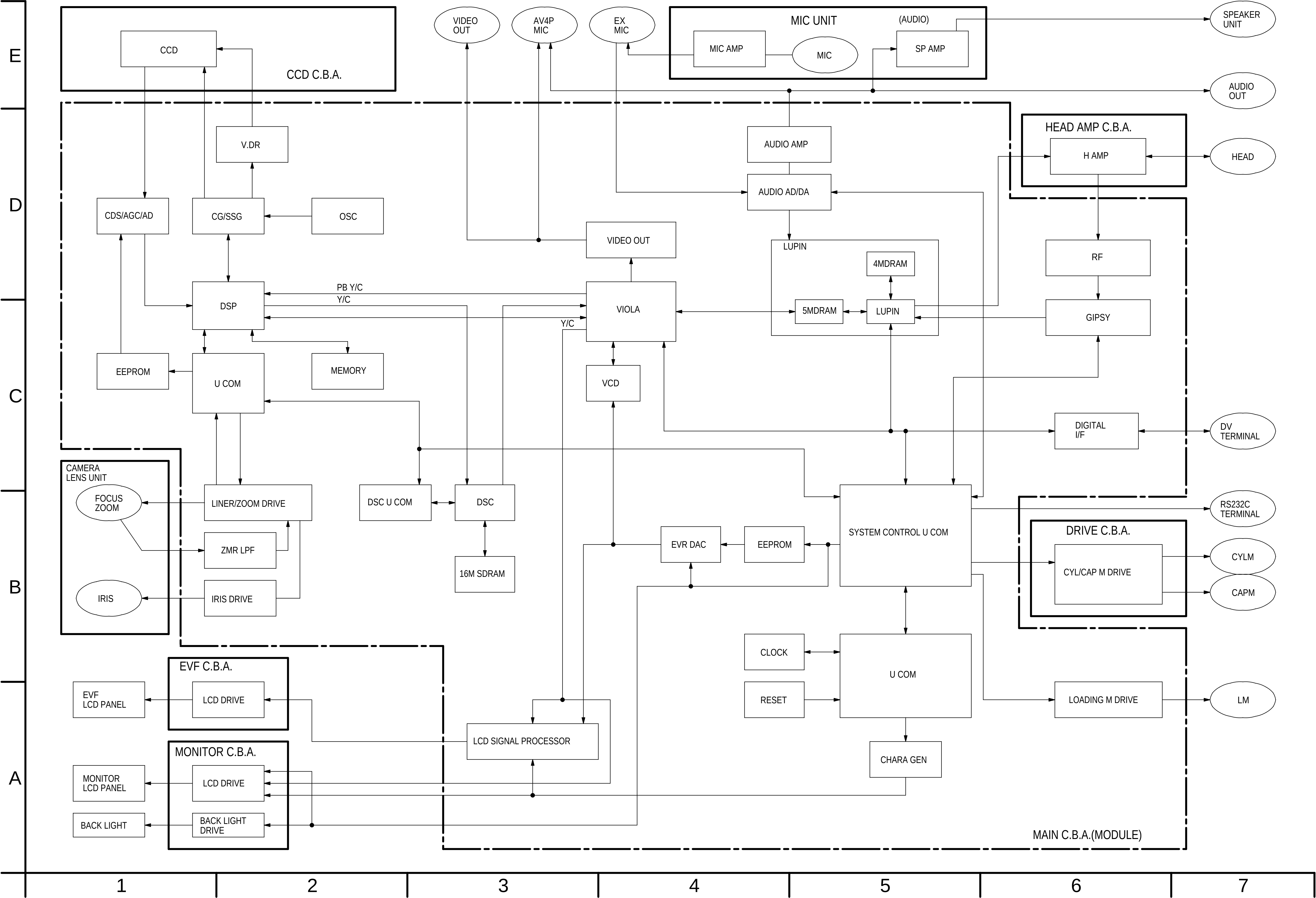
A

(COMPONENT SIDE) (FOIL SIDE)

1 2 3 4

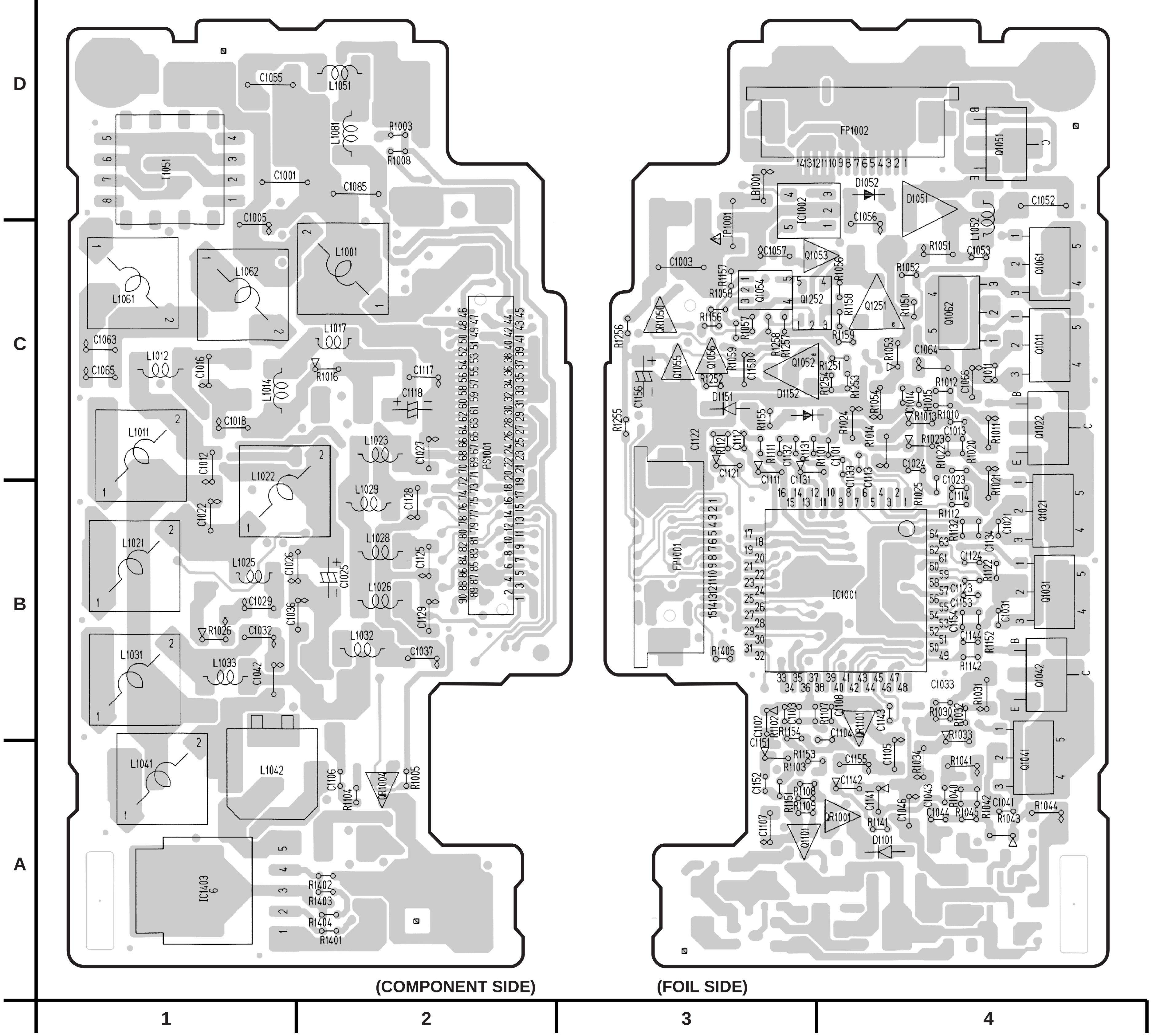

TO MAIN CONNECTION
<TO PP3002>
PS3002
UART1 1
D GND 2
A RCH IN 3
D GND 4
D GND 5
D GND 6
V OUT 7
LINE DET 8
A RCH OUT 9
Y OUT 10
D GND 11
D GND 12
D GND 13
MULTI 5V 14
SERIAL CLK 15
CR POWER 16
SERIAL DATA 17
PIT ON 18
D GND 19
D GND 20
D GND 21
C OUT 22
A LCH OUT 23
SE GND 24
SE GND 25
SYNC DET 26
D GND 27
A LCH IN 28
CN Ⓗ 29
UART0 30
TO MULTI JACK CONNECTOR
PS3003
28 SERIAL CLK
27 CR POWER
26 MULTI 5V
25 SERIAL DATA
24 D GND
23 PIT ON
22 Y OUT
21 V GND
20 A RCH OUT
19 C OUT
18 LINE DET
17 A LCH OUT
16 V OUT
15 SE GND
14
13
12
11 SYNC DET
10
9 V GND
8 A RCH IN
7
6 D GND
5 A LCH IN
4 UART1
3 CN Ⓗ
2 D GND
1 UART0
C
B
A
1
2
3
4

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS
SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU
ORDER A PART,PLEASE REFER TO PARTS LIST.


E
D
C
B
A
1
2
3
4
5
6
7
CCD
CCD C.B.A.
VIDEO OUT
AV4P MIC
EX MIC
MIC UNIT
(AUDIO)
MIC AMP
MIC
SP AMP
SPEAKER UNIT
AUDIO OUT
V.DR
AUDIO AMP
HEAD AMP C.B.A.
H AMP
HEAD
CDS/AGC/AD
CG/SSG
OSC
AUDIO AD/DA
VIDEO OUT
LUPIN
4MDRAM
RF
PB Y/C
Y/C
DSP
VIOLA
Y/C
5MDRAM
LUPIN
GIPSY
EEPROM
U COM
MEMORY
VCD
DIGITAL I/F
DV TERMINAL
CAMERA LENS UNIT
FOCUS ZOOM
LINER/ZOOM DRIVE
DSC U COM
DSC
SYSTEM CONTROL U COM
RS232C TERMINAL
DRIVE C.B.A.
ZMR LPF
EVR DAC
EEPROM
CYL/CAP M DRIVE
CYLM
16M SDRAM
CAPM
IRIS
IRIS DRIVE
CLOCK
U COM
EVF C.B.A.
EVF LCD PANEL
LCD DRIVE
RESET
LOADING M DRIVE
LM
LCD SIGNAL PROCESSOR
MONITOR C.B.A.
CHARA GEN
MONITOR LCD PANEL
LCD DRIVE
BACK LIGHT
BACK LIGHT DRIVE
MAIN C.B.A.(MODULE)

NOTE:MULTILAYER C.B.A.
THIS C.B.A. IS Multi-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT-PATTERNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.

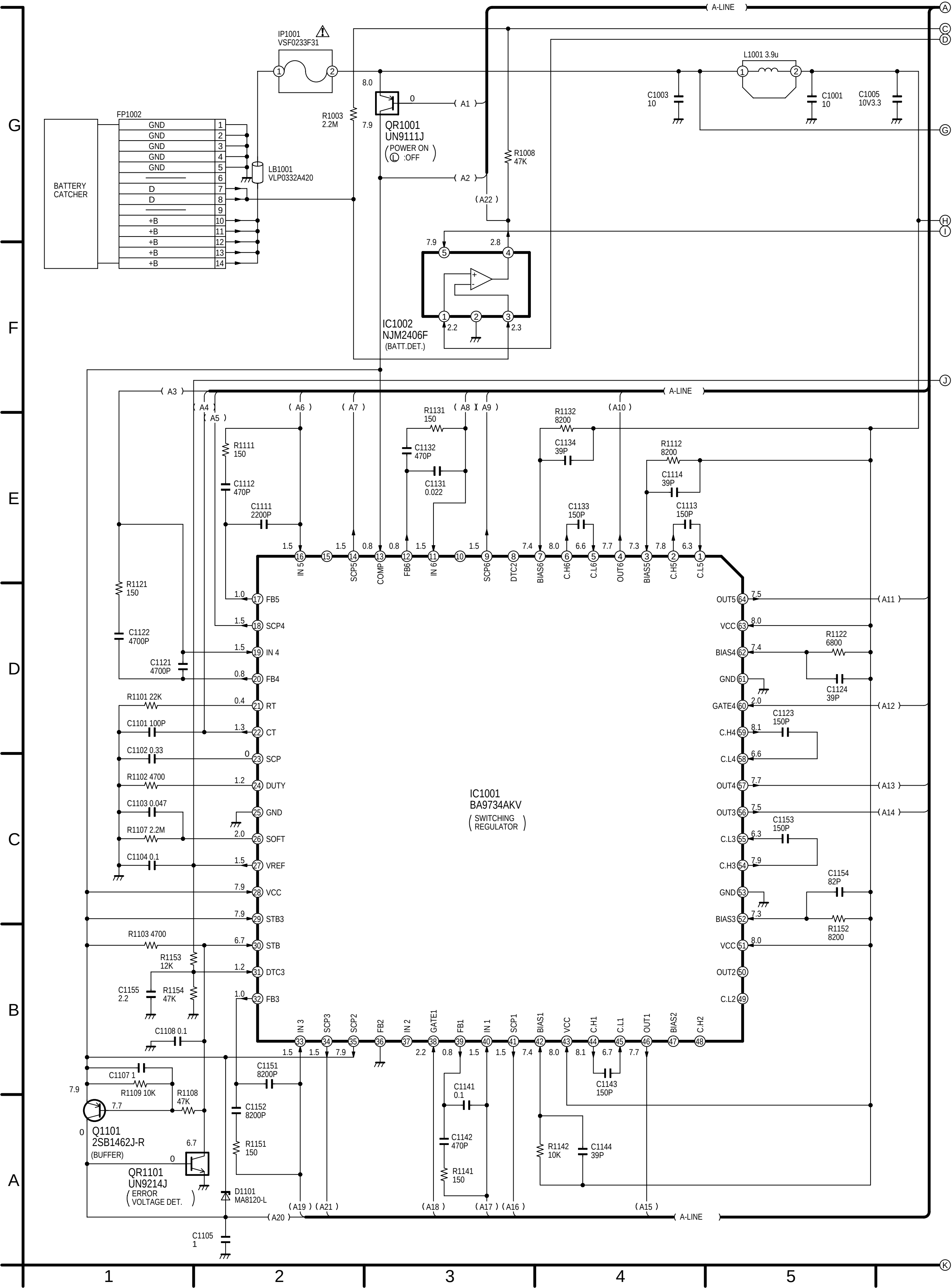
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

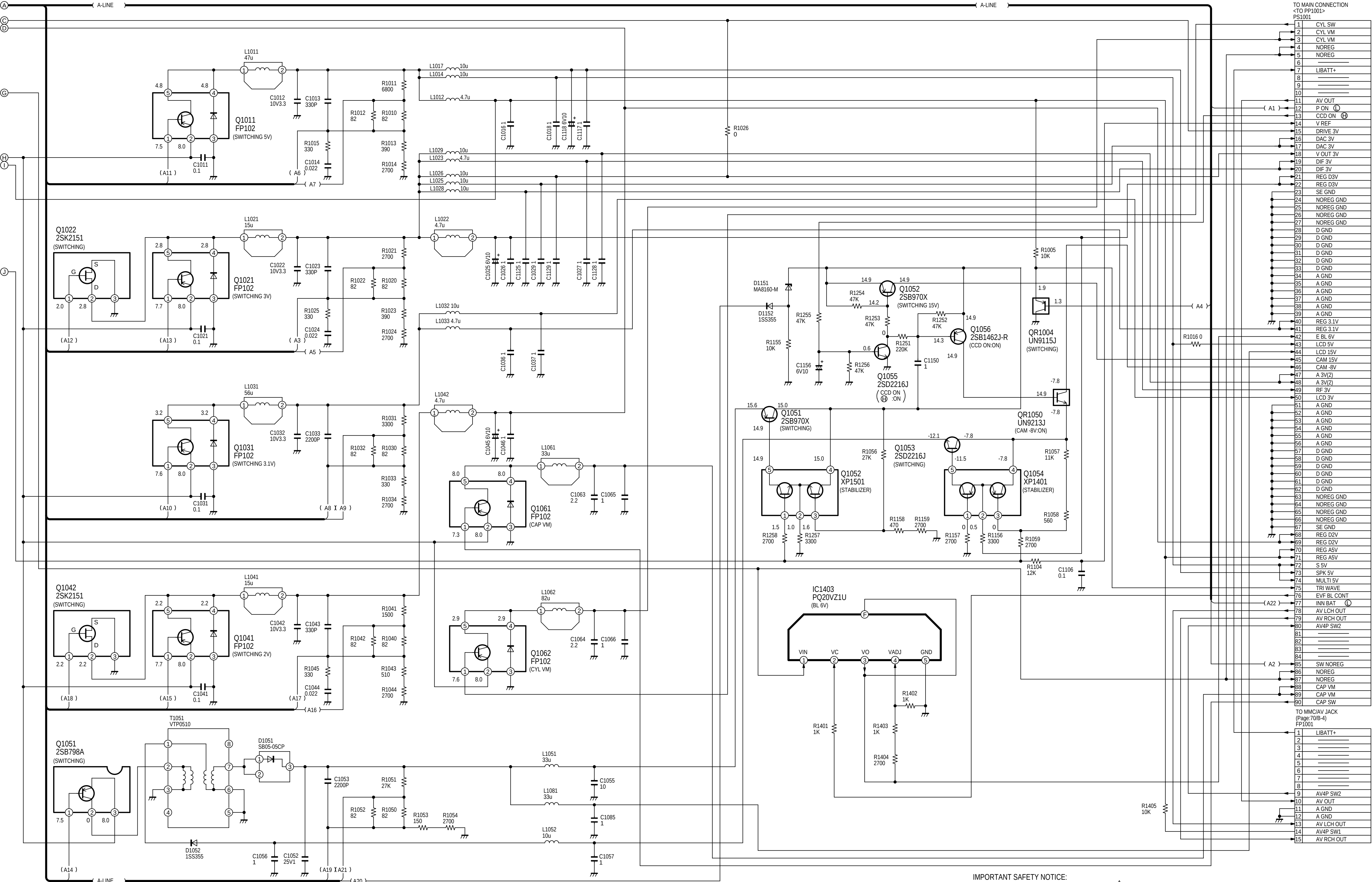

D
C
B
A
1
2
3
4
C1055
L1051
T1051
L1081
R1003
R1008
C1001
C1085
C1005
L1061
L1062
L1001
C1063
C1065
L1012
C1016
L1017
L1014
R1016
C1117
C1118
C1018
L1011
L1022
C1012
L1023
C1027
PS1001
L1029
C1128
C1022
L1021
L1028
C1125
L1025
C1026
C1025
C1029
L1026
C1036
C1129
R1026
C1032
L1031
L1032
C1037
L1033
C1042
L1041
L1042
C1106
R1104
QR1004
R1005
IC1403
R1402
R1403
R1404
R1401
FP1002
Q1051
LB1001
D1052
IC1002
D1051
C1052
IP1001
C1056
C1057
Q1053
R1051
L1052
C1053
Q1061
C1003
R1157
R1056
R1052
R1058
Q1054
Q1252
R1158
Q1251
R1050
Q1062
QR1050
R1156
R1057
R1258
R1257
R1159
R1256
Q1055
Q1056
R1059
C1150
Q1052
R1251
R1253
R1053
C1064
Q1011
C1156
R1252
D1152
R1254
R1012
C1066
C1011
D1151
R1255
R1155
R1024
R1014
R1054
C1014
R1015
R1013
R1010
Q1022
C1122
R1121
C1112
C1121
R1111
C1132
R1131
R1101
C1101
C1013
R1023
R1022
R1020
R1011
C1111
C1131
C1113
C1024
C1023
R1025
C1114
R1021
FP1001
R1112
R1132
C1134
C1021
Q1021
IC1001
C1124
R1122
C1031
C1123
C1153
C1154
C1144
R1152
Q1031
R1405
R1142
C1033
Q1042
C1102
R1102
C1103
R1107
C1108
R1154
C1104
QR1101
C1143
R1030
R1032
R1031
R1033
C1151
R1153
R1103
C1155
C1105
R1034
R1041
Q1041
C1152
R1151
R1108
R1109
C1142
C1141
C1046
C1043
C1044
R1040
R1045
R1042
C1041
R1043
R1044
QR1001
R1141
C1107
Q1101
D1101

(COMPONENT SIDE)

(FOIL SIDE)

Power C.B.A.	
Integrated Circuit	
IC1001	B-4
IC1002	D-3
IC1403	A-1
Transistor	
Q1011	C-4
Q1021	B-4
Q1022	C-4
Q1031	B-4
Q1041	A-4
Q1042	B-4
Q1051	D-4
Q1052	C-3
Q1053	C-3
Q1054	C-3
Q1055	C-3
Q1056	C-3
Q1061	C-4
Q1062	C-4
Q1101	A-3
Q1251	C-4
Q1252	C-3
Transistor & Resistor	
QR1001	A-4
QR1004	A-2
QR1050	C-3
QR1101	B-4
Diode	
D1051	D-4
D1052	D-4
D1101	A-4
D1151	C-3
D1152	C-4
Connector	
FP1001	B-3
FP1002	D-4
PS1001	C-2
IP	
IP1001	C-3
Transformer	
T1051	D-1
Coil	
L1001	C-2
L1011	C-1
L1012	C-1
L1014	C-1
L1017	C-2
L1021	B-1
L1022	C-1
L1023	C-2
L1025	B-1
L1026	B-2
L1028	B-2
L1029	B-2
L1031	B-1
L1032	B-2
L1033	B-1
L1041	A-1
L1042	A-1
L1051	D-2
L1052	D-3
L1061	C-1
L1062	C-1
L1081	D-2
LB1001	D-3
Capacitor	
C1001	D-1
C1003	C-3
C1005	D-1
C1011	C-4
C1012	C-1
C1013	C-4
C1014	C-4
C1016	C-1
C1018	C-1
C1021	B-4
C1022	B-1
C1023	B-4
C1024	C-4
C1025	B-2
C1026	B-2
C1027	C-2
C1029	B-1
C1031	B-4
C1032	B-1
C1033	B-4
C1036	B-2
C1037	B-2
C1041	A-4
C1042	B-1
C1043	A-4
C1044	A-4
C1045	A-4
C1046	A-4
C1052	D-4
C1053	C-4
C1055	D-1
C1056	C-4
C1057	C-3
C1063	C-1
C1064	C-4
C1065	C-1
C1066	C-4
C1085	D-2
C1101	C-4
C1102	B-3
C1103	B-3
C1104	A-4
C1105	A-4
C1106	A-2
C1107	A-3
C1108	B-4
C1111	C-3
C1112	C-3
C1113	B-4
C1114	B-4
C1117	C-2
C1118	C-2
C1121	C-3
C1122	C-3
C1123	B-4
C1124	B-4
C1125	B-2
C1128	B-2
C1129	B-2
C1131	C-3
C1132	C-3
C1133	C-4
C1134	B-4
C1141	A-4
C1142	A-4
C1143	B-4
C1144	B-4
C1150	C-3
C1151	A-3
C1152	B-4
C1153	A-3
C1154	B-4
C1155	A-4
C1156	C-3
Resistor	
R1003	D-2
R1005	A-2
R1008	D-2
R1010	C-4
R1011	C-4
R1012	C-4
R1013	C-4
R1014	C-4
R1015	C-4
R1016	C-2
R1020	C-4
R1021	B-4
R1022	C-4
R1023	C-4
R1024	C-4
R1025	B-4
R1026	B-1
R1030	B-4
R1031	B-4
R1032	B-4
R1033	A-4
R1034	A-4
R1040	A-4
R1041	A-4
R1042	A-4
R1043	A-4
R1044	A-4
R1045	A-4
R1050	C-4
R1051	C-4
R1052	C-4
R1053	C-4
R1054	C-4
R1056	C-4
R1057	C-3
R1058	C-3
R1059	C-3
R1101	C-3
R1102	B-3
R1103	A-3
R1104	A-2
R1107	B-4
R1108	A-3
R1109	A-3
R1111	C-3
R1112	B-4
R1121	C-3
R1122	B-4
R1131	C-3
R1132	B-4
R1141	A-4
R1142	B-4
R1151	A-3
R1152	B-4
R1153	A-3
R1154	A-3
R1155	C-3
R1156	C-3
R1157	C-3
R1158	C-4
R1159	C-4
R1251	C-4
R1252	C-3
R1253	C-4
R1254	C-4
R1255	C-3
R1256	C-3
R1257	C-3
R1258	C-3
R1401	A-2
R1402	A-2
R1403	A-2
R1404	A-2
R1405	B-3

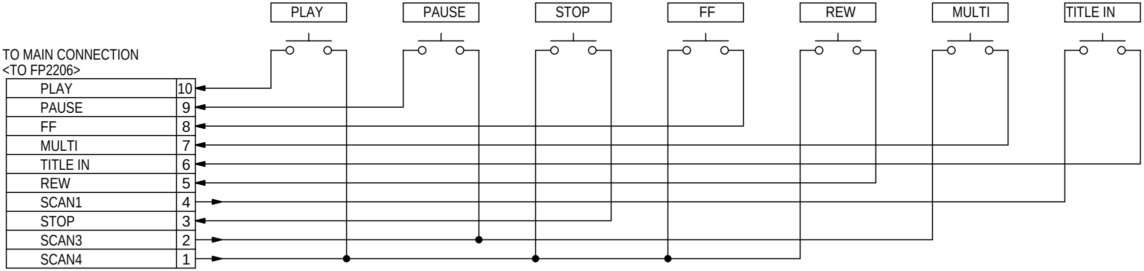

A-LINE
A
C
D
G
H
I
J
K
IP1001
VSF0233F31
L1001 3.9u
C1003
10
C1001
10
C1005
10V3.3
FP1002
BATTERY
CATCHER
GND
GND
GND
GND
GND
D
D
+B
+B
+B
+B
+B
1
2
3
4
5
6
7
8
9
10
11
12
13
14
LB1001
VLP0332A420
R1003
2.2M
8.0
7.9
0
QR1001
UN9111J
POWER ON
L :OFF
A1
A2
A22
R1008
47K
7.9
2.8
2.2
2.3
IC1002
NJM2406F
(BATT.DET.)
A3
A4
A5
A6
A7
A8
A9
A10
R1131
150
C1132
470P
C1131
0.022
R1132
8200
C1134
39P
R1112
8200
C1114
39P
C1133
150P
C1113
150P
R1111
150
C1112
470P
C1111
2200P
R1121
150
C1122
4700P
C1121
4700P
1.5
1.5
0.8
0.8
1.5
1.5
7.4
8.0
6.6
7.7
7.3
7.8
6.3
IN 5
SCP5
COMP
FB6
IN 6
SCP6
DTC2
BIAS6
C.H6
C.L6
OUT6
BIAS5
C.H5
C.L5
1.0 FB5
1.5 SCP4
1.5 IN 4
0.8 FB4
R1101 22K
0.4 RT
C1101 100P
1.3 CT
C1102 0.33
0 SCP
R1102 4700
1.2 DUTY
GND
C1103 0.047
R1107 2.2M
2.0 SOFT
C1104 0.1
1.5 VREF
7.9 VCC
7.9 STB3
R1103 4700
6.7 STB
R1153
12K
1.2 DTC3
C1155
2.2
R1154
47K
1.0 FB3
C1108 0.1
IC1001
BA9734AKV
SWITCHING
REGULATOR
OUT5 7.5
A11
VCC 8.0
BIAS4 7.4
R1122
6800
GND
C1124
39P
GATE4 2.0
A12
C.H4 8.1
C1123
150P
C.L4 6.6
OUT4 7.7
A13
OUT3 7.5
A14
C1153
150P
C.L3 6.3
C.H3 7.9
GND
C1154
82P
BIAS3 7.3
R1152
8200
VCC 8.0
OUT2
C.L2
IN 3
SCP3
SCP2
FB2
IN 2
GATE1
FB1
IN 1
SCP1
BIAS1
VCC
C.H1
C.L1
OUT1
BIAS2
C.H2
1.5
1.5
7.9
2.2
0.8
1.5
1.5
7.4
8.0
8.1
6.7
7.7
C1151
8200P
C1141
0.1
C1143
150P
C1107 1
7.9
R1109 10K
R1108
47K
7.7
Q1101
2SB1462J-R
(BUFFER)
0
6.7
0
C1152
8200P
R1151
150
C1142
470P
R1141
150
R1142
10K
C1144
39P
QR1101
UN9214J
ERROR
VOLTAGE DET.
D1101
MA8120-L
A19
A21
A18
A17
A16
A15
A20
C1105
1
1
2
3
4
5


A-LINE
A
C
D
G
H
I
J
K
L1011 47u
Q1011 FP102 (SWITCHING 5V)
C1011 0.1
C1012 10V3.3
C1013 330P
R1011 6800
R1012 82
R1010 82
R1013 390
R1014 2700
R1015 330
C1014 0.022
L1017 10u
L1014 10u
L1012 4.7u
C1016 1
C1018 1
C1118 6V10
C1117 1
R1026 0
L1029 10u
L1023 4.7u
L1026 10u
L1025 10u
L1028 10u
Q1022 2SK2151 (SWITCHING)
L1021 15u
Q1021 FP102 (SWITCHING 3V)
C1021 0.1
C1022 10V3.3
C1023 330P
R1021 2700
R1022 82
R1020 82
R1023 390
R1024 2700
R1025 330
C1024 0.022
L1022 4.7u
C1025 6V10
C1026 1
C1125 1
C1029 1
C1129 1
C1027 1
C1128 1
L1032 10u
L1033 4.7u
C1036 1
C1037 1
L1031 56u
Q1031 FP102 (SWITCHING 3.1V)
C1031 0.1
C1032 10V3.3
C1033 2200P
R1031 3300
R1032 82
R1030 82
R1033 330
R1034 2700
L1042 4.7u
C1045 6V10
C1046 1
L1061 33u
Q1061 FP102 (CAP VM)
C1063 2.2
C1065 1
Q1042 2SK2151 (SWITCHING)
L1041 15u
Q1041 FP102 (SWITCHING 2V)
C1041 0.1
C1042 10V3.3
C1043 330P
R1041 1500
R1042 82
R1040 82
R1043 510
R1044 2700
R1045 330
C1044 0.022
L1062 82u
Q1062 FP102 (CYL VM)
C1064 2.2
C1066 1
Q1051 2SB798A (SWITCHING)
T1051 VTP0510
D1051 SB05-05CP
D1052 1SS355
C1056 1
C1052 25V1
C1053 2200P
R1051 27K
R1052 82
R1050 82
R1053 150
R1054 2700
L1051 33u
C1055 10
L1081 33u
C1085 1
L1052 10u
C1057 1
(A1) (A2) (A3) (A4) (A5) (A6) (A7) (A8) (A9) (A10) (A11) (A12) (A13) (A14) (A15) (A16) (A17) (A18) (A19) (A20) (A21) (A22)
D1151 MA8160-M
D1152 1SS355
R1155 10K
R1255 47K
C1156 6V10
R1254 47K
R1253 47K
R1256 47K
Q1052 2SB970X (SWITCHING 15V)
Q1055 2SD2216J (CCD ON Ⓗ :ON)
R1251 220K
R1252 47K
C1150 1
Q1056 2SB1462J-R (CCD ON:ON)
R1005 10K
QR1004 UN9115J (SWITCHING)
QR1050 UN9213J (CAM -8V:ON)
Q1051 2SB970X (SWITCHING)
R1056 27K
Q1053 2SD2216J (SWITCHING)
R1057 11K
Q1052 XP1501 (STABILIZER)
Q1054 XP1401 (STABILIZER)
R1258 2700
R1257 3300
R1158 470
R1159 2700
R1157 2700
R1156 3300
R1059 2700
R1058 560
R1104 12K
C1106 0.1
R1016 0
IC1403 PQ20VZ1U (BL 6V)
VIN VC VO VADJ GND F
R1401 1K
R1402 1K
R1403 1K
R1404 2700
R1405 10K
TO MAIN CONNECTION <TO PP1001> PS1001
1 CYL SW
2 CYL VM
3 CYL VM
4 NOREG
5 NOREG
6
7 LIBATT+
8
9
10
11 AV OUT
12 P ON Ⓛ
13 CCD ON Ⓗ
14 V REF
15 DRIVE 3V
16 DAC 3V
17 DAC 3V
18 V OUT 3V
19 DIF 3V
20 DIF 3V
21 REG D3V
22 REG D3V
23 SE GND
24 NOREG GND
25 NOREG GND
26 NOREG GND
27 NOREG GND
28 D GND
29 D GND
30 D GND
31 D GND
32 D GND
33 D GND
34 A GND
35 A GND
36 A GND
37 A GND
38 A GND
39 A GND
40 REG 3.1V
41 REG 3.1V
42 E BL 6V
43 LCD 5V
44 LCD 15V
45 CAM 15V
46 CAM -8V
47 A 3V(2)
48 A 3V(2)
49 RF 3V
50 LCD 3V
51 A GND
52 A GND
53 A GND
54 A GND
55 A GND
56 A GND
57 D GND
58 D GND
59 D GND
60 D GND
61 D GND
62 D GND
63 NOREG GND
64 NOREG GND
65 NOREG GND
66 NOREG GND
67 SE GND
68 REG D2V
69 REG D2V
70 REG A5V
71 REG A5V
72 S 5V
73 SPK 5V
74 MULTI 5V
75 TRI WAVE
76 EVF BL CONT
77 INN BAT Ⓛ
78 AV LCH OUT
79 AV RCH OUT
80 AV4P SW2
81
82
83
84
85 SW NOREG
86 NOREG
87 NOREG
88 CAP VM
89 CAP VM
90 CAP SW
TO MMC/AV JACK (Page:70/B-4) FP1001
1 LIBATT+
2
3
4
5
6
7
8
9 AV4P SW2
10 AV OUT
11 A GND
12 A GND
13 AV LCH OUT
14 AV4P SW1
15 AV RCH OUT
6 7 8 9 10 11 12 13 14 15 16

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

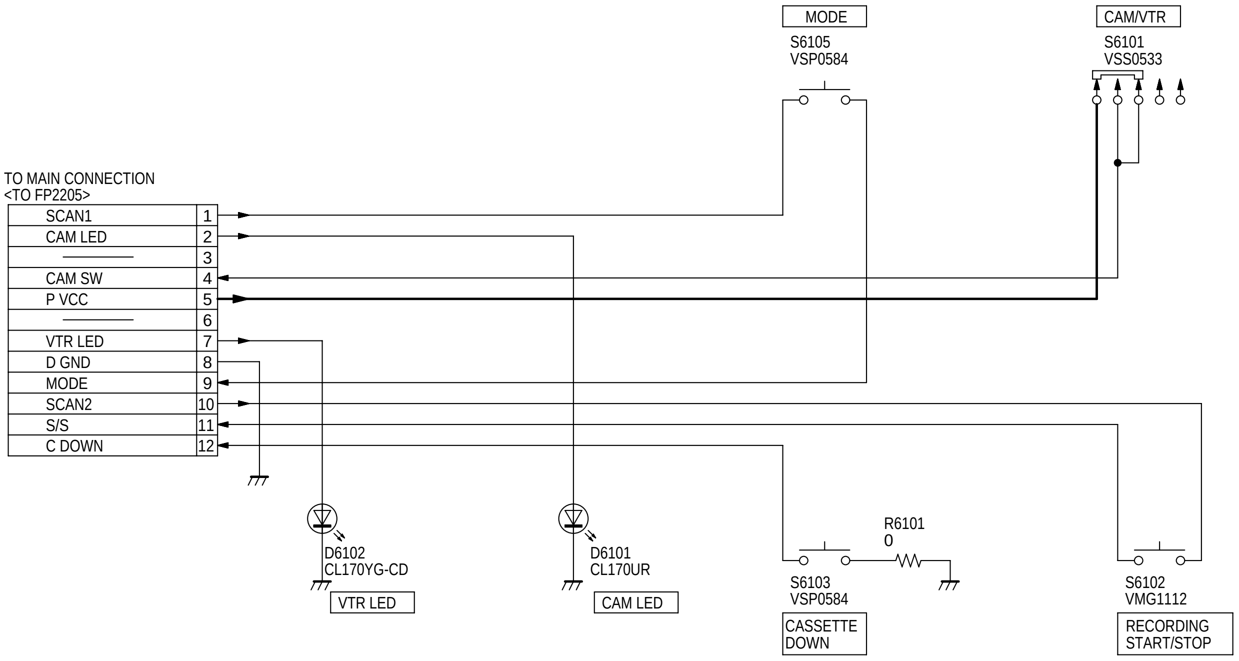
NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

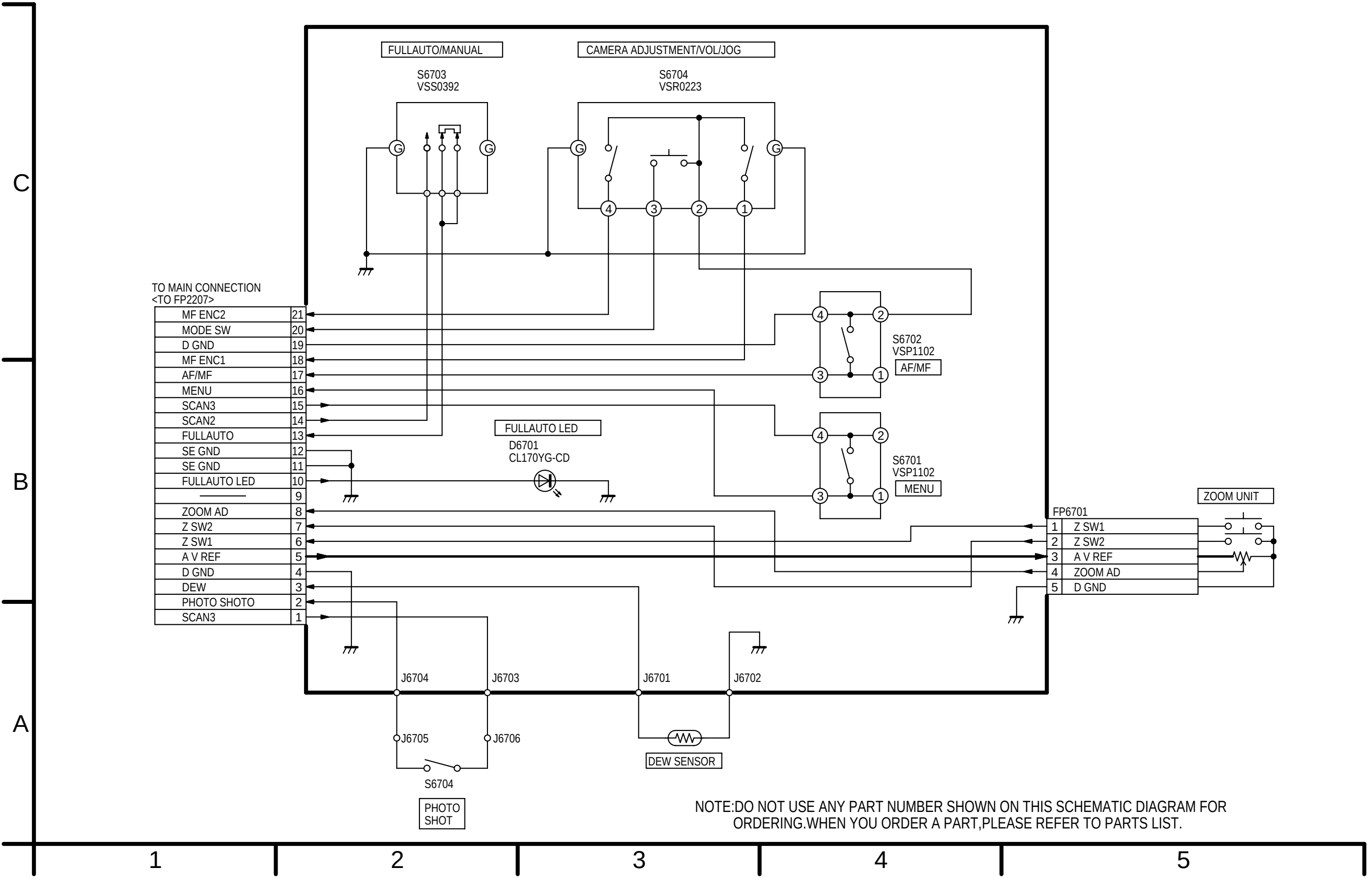

PLAY
PAUSE
STOP
FF
REW
MULTI
TITLE IN
TO MAIN CONNECTION
<TO FP2206>
PLAY 10
PAUSE 9
FF 8
MULTI 7
TITLE IN 6
REW 5
SCAN1 4
STOP 3
SCAN3 2
SCAN4 1

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

C
B
A
1
2
3
4

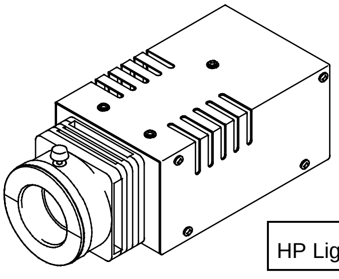

TO MAIN CONNECTION
<TO FP2205>
SCAN1 1
CAM LED 2
3
CAM SW 4
P VCC 5
6
VTR LED 7
D GND 8
MODE 9
SCAN2 10
S/S 11
C DOWN 12
MODE
S6105
VSP0584
CAM/VTR
S6101
VSS0533
D6102
CL170YG-CD
VTR LED
D6101
CL170UR
CAM LED
R6101
0
S6103
VSP0584
CASSETTE DOWN
S6102
VMG1112
RECORDING START/STOP
B
A
1
2
3
4

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.


FULLAUTO/MANUAL
S6703
VSS0392
CAMERA ADJUSTMENT/VOL/JOG
S6704
VSR0223
TO MAIN CONNECTION
<TO FP2207>
MF ENC2 21
MODE SW 20
D GND 19
MF ENC1 18
AF/MF 17
MENU 16
SCAN3 15
SCAN2 14
FULLAUTO 13
SE GND 12
SE GND 11
FULLAUTO LED 10
9
ZOOM AD 8
Z SW2 7
Z SW1 6
A V REF 5
D GND 4
DEW 3
PHOTO SHOTO 2
SCAN3 1
S6702
VSP1102
AF/MF
S6701
VSP1102
MENU
FULLAUTO LED
D6701
CL170YG-CD
ZOOM UNIT
FP6701
1 Z SW1
2 Z SW2
3 A V REF
4 ZOOM AD
5 D GND
J6704
J6703
J6701
J6702
J6705
J6706
S6704
PHOTO SHOT
DEW SENSOR
G
1
2
3
4
A
B
C
1
2
3
4
5

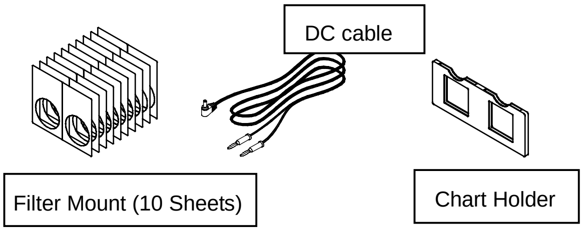
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

(Part Number: VFK1164TDVLB)



HP Light Box

Standard Accessory



Features

High-Intensity Luminance and Long Life Made Possible by New Halogen Lamp (20 W / DC 12 V)

Luminance: 1,900 cd/m^2 (Luminance conversion: ≈ 5,900 lux) (Rate compared with conventional models: 2.4 times*)
Life: Over 1,000 hours (Rate compared with conventional models: Over 10 times)

Compact Design

Specific volume compared with conventional models: Approx. 65%*

*Not including camera stand

Attachment of Collimator

(Collimator: Infinity Adjustment Lens)

It is possible to screw up a collimator to the Light Box. And it is very easy to compensate for the slant (shear of the optical axis) caused by the weight of the collimator itself.

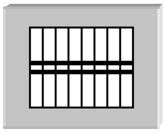
Attachment of Charts and Optical Filters

For easy and quick replacement of the charts, the light box is equipped with the slot and the chart holder.
Also, it is equipped with the slots for optical filters, one for color temperature conversion filters, and one for color compensation filters.
It is very convenient to set up for a color condition according to adjustment procedure.

Integrated Cooling Fan

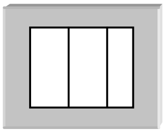
To prevent the temperature from rising inside the Light Box and to extend the life of the lamp, it is equipped.

Optional Accessory



HP Gray scale

VFK1164TDVGS



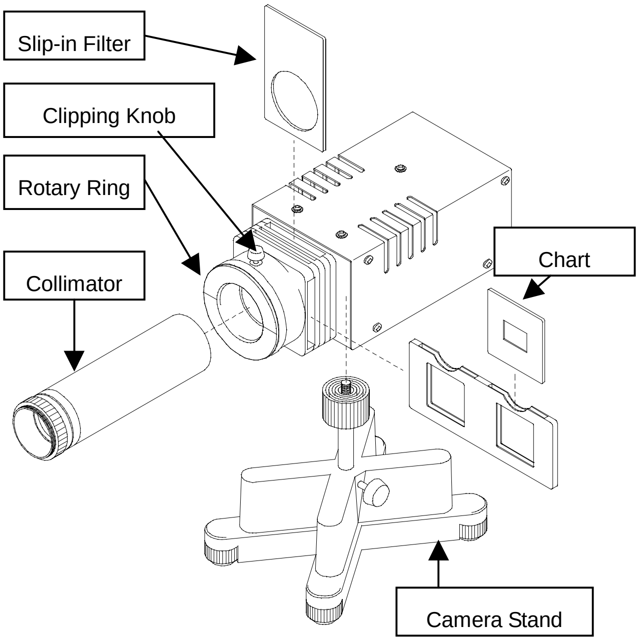
HP Color Bar

VFK1164TDVCB

Preparation

DC power supply:
More than 2 A at 12 V
Compact transmission chart:
HP Gray-scale: VFK1164TDVGS
HP Color bar: VFK1164TDVCB
Camera stand: VFK1164TST01
Optical filters (Made by Triacetyl Cellulose):
Color balancing filter: Commercially available
Color compensating filter: Commercially available

Installation



1. Attach one camera stand to the bottom of the Light Box and attach the other one to the tripod mount at the bottom of the camcorder. Next, adjust the height of each camera stand (using coarse control) so that the central point of the emission face of the Light Box aligns with the central point of the camcorder s lens.
2. Detach the end of the collimator (Infinity Adjustment Lens). Be sure to loosen the Light Box’s clipping knob* before attaching the collimator to the Light Box. Screw the end of collimator into the rotary ring on the front of the Light Box to attach.

3. Attach the other end (lens side) of the collimator to the filter mounting screw of the camcorder's lens. If it does not fit, use the step-up ring provided with the collimator.
4. Load the compact transmission chart (gray-scale/color chart) in the chart holder and insert the chart holder into the chart slot.
5. Connect the DC regulated power supply (DC 12 V ± 0.2 V, approx. 1.7 A) to the Light Box using the provided DC cord (red (+), black (–)) and turn on the power switch at the rear of the Light Box.
6. While shooting the chart with the camcorder, adjust (using fine control) the chart holder position as well as the height of the Light Box and camcorder until the desired angle of view is achieved.

*Hint:

Tightening the clipping knob fixes the rotary ring firmly. When it is completely tightened, the collimator attached to the rotary ring is at right angles to the emission face of the Light Box or chart. If the collimator cannot be attached to the camcorder, try tightening the clipping knob to compensate for shearing of the optical axis in the collimator. On the other hand, if the collimator can be attached to the camcorder, try loosening the clipping knob slightly to make a little room around the clipping knob.

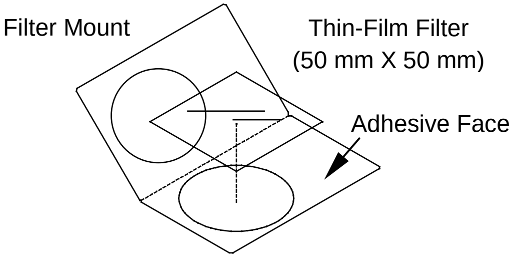
Optical Filter (Made by Triacetyl cellulose)

Camcorder adjustment requires a commercially-available a color temperature conversion filter and a color compensation filter. For all kinds of thin film filters, use the provided filter mount.
To make a slip-in filter with the desired optical characteristics, follow the procedures below.

To use a slip-in filter, insert it into the Light Box filter slot. It is possible to insert 7 slip-in filters at a time into the filter slot.

How to Make a Slip-in Filter

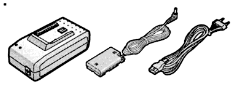
1. Cut the desired optical filter to 50 mm x 50 mm.
2. Remove the seal at the rear of the filter mount, stick the optical filter in the filter mount (over the hole), then fold the filter mount in half.
3. It is recommended that you write the filter factor on the filter mount.



Specifications

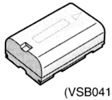
Size:	90 mm (W) x 197.5 mm (D) x 70 mm (H)
Weight:	750 g
Power Supply:	External DC regulated power supply (DC 12 V more than 2 A)
Lamp:	20 W/DC 12 V halogen lamp (Life: 2,000 hours)
Luminance:	1,900 cd/m^2 ± 100 cd/m^2 (center of the emission face) (luminance conversion: ≈ 5,900 lux)
Homogeneity:	Within ± 10%
Color temperature:	3,100 K ± 100 K (center of the emission face)
CIE chromaticity coordinate:	x = 0.430 ± 0.02 y = 0.400 ± 0.02
Internal filter:	LB 60 + M 50 (modified: 1.5 mm thickness)

1.



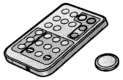
(VSK0565) (VEK8925) (VJA0664)

2.



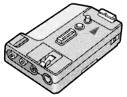
(VSB0418)

3.



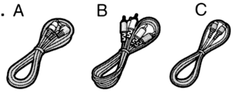
(VEQ2289) (CR2025)

4.



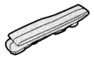
(VSK0561)

5.



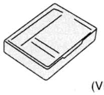
(VJA1028) (VJA0788) (VJA0658)

6.



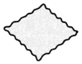
(VFC2905)

7.



(VFK1451)

8.

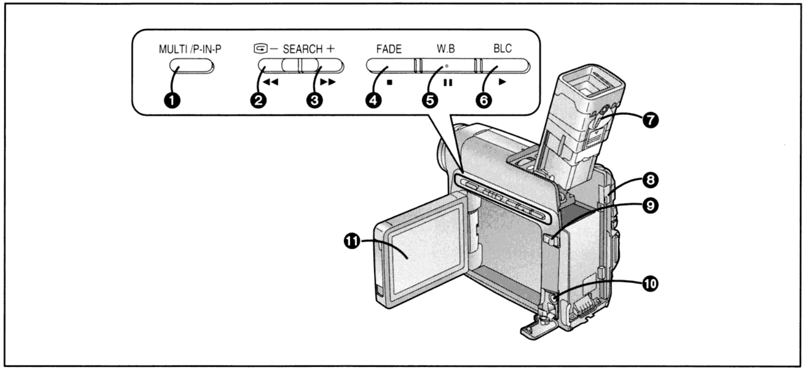


(VFC1792)

Standard Accessories

1. **AC Adaptor** (➔ 10, 11, 92)
   To supply power to the Movie Camera.
   To charge the Battery.
   DC Input Lead and AC Mains Lead (➔ 10, 11)
   To connect the AC Adaptor to the Movie Camera and to an AC mains socket.
2. **Battery Pack** (➔ 11)
   To supply the Movie Camera with power.
3. **Remote Controller and Button-Type Battery** (➔ 65, 69, 70)
4. **Output Terminal Box [AV ONE TOUCH STATION]** (➔ 31, 32, 71)
   Equipped with AV Sockets, Edit Socket, Digital Still Picture Terminal, and Headphone Socket.
5. **A. AV Cable (PHONO - M3)** (➔ 31, 72)
   B. AV Cable (PHONO - PHONO) (➔ 31, 72)
   C. S-Video Cable (➔ 31, 72, 73, 74, 75, 76)
6. **Shoulder Strap** (➔ 16)
7. **Digital Video Head Cleaner** (➔ 94)
8. **Cleaning Tissue**
   To clean the Lens and the LCD Monitor.

Controls and Components



① **Multi-Picture Button [MULTI]** (➔ 44, 45, 46, 57, 58, 59, 60)
Picture-in-Picture Button [P-IN-P] (➔ 47)

② **Reverse Search Button [–SEARCH]** (➔ 33)
Rewind/Review Button [◀◀] (➔ 27, 28)
Recording Check Button [⊖] (➔ 18)

③ **Forward Search Button [SEARCH+]** (➔ 33)
Fast Forward/Cue Button [▶▶] (➔ 28)

④ **Fade Button [FADE]** (➔ 38)
Stop Button [■] (➔ 27)

⑤ **White Balance Button [W.B]** (➔ 50, 51)
Pause Button [❚❚] (➔ 30)

⑥ **Backlight Button [BLC]** (➔ 18)
Play Button [▶] (➔ 27)

⑦ **Eyepiece Corrector Lever** (➔ 15)

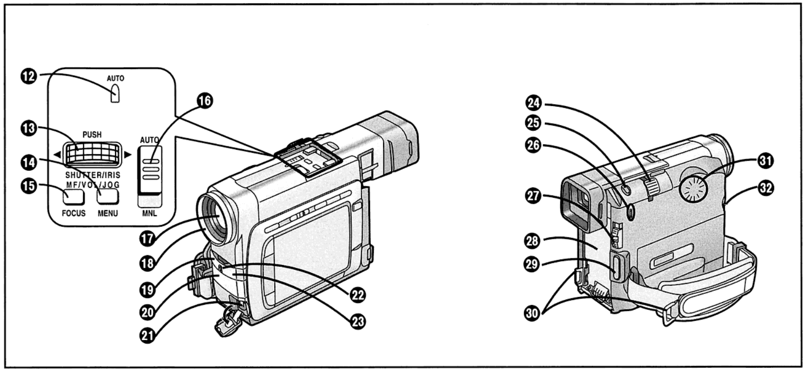
⑧ **Battery Eject Button [BATT. EJECT PUSH]** (➔ 11)

⑨ **LCD Monitor Open Lever [OPEN_]** (➔ 15)

⑩ **Audio-Video Output Socket [AV OUT]** (➔ 31, 72, 97)
When a cable is connected to this socket, the Movie Camera's built-in speaker is turned off.

⑪ **LCD Monitor** (➔ 15)

Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the LCD Monitor screen. However, this is not a malfunction and does not affect the recorded picture.



⑫ **Auto Mode Lamp [AUTO]** (➔ 17)
This lamp lights when you set the Mode Selector Switch to [AUTO].

⑬ **Multi-Function Dial [PUSH]** (➔ 27, 28, 30, 52, 53, 54, 60, 83, 88, 90)

⑭ **Menu Button [MENU]** (➔ 83)

⑮ **Focus Button [FOCUS]** (➔ 52)

⑯ **Mode Selector Switch [AUTO/MNL]** (➔ 17, 39, 50, 51, 52, 53, 54)

⑰ **Lens**

⑱ **Lens Hood** (➔ 97)

⑲ **White Balance Sensor** (➔ 101)

⑳ **Microphone (built-in, stereo)**

㉑ **DV Terminal (i.LINK) [i]**
To output digital signals.
Connect it to digital video equipment.
"i.LINK" is the name of the connector in accordance with the International Standard IEEE1394-1995.
" i " is the logo marked on products conforming with the "i.LINK" specifications.
Inputting digital signals into this Movie Camera is not possible.

㉒ **Recording Lamp** (➔ 17)

㉓ **Remote Control Sensor** (➔ 70)

㉔ **Zoom Lever [W/T]** (➔ 20, 21)

㉕ **Photoshot Button [PHOTO SHOT]** (➔ 22, 23)

㉖ **Operation Mode Lamps [CAMERA/VCR]** (➔ 17, 27)

㉗ **Off/On Mode Selector Switch [OFF/ON/MODE]** (➔ 15, 17, 27, 32)

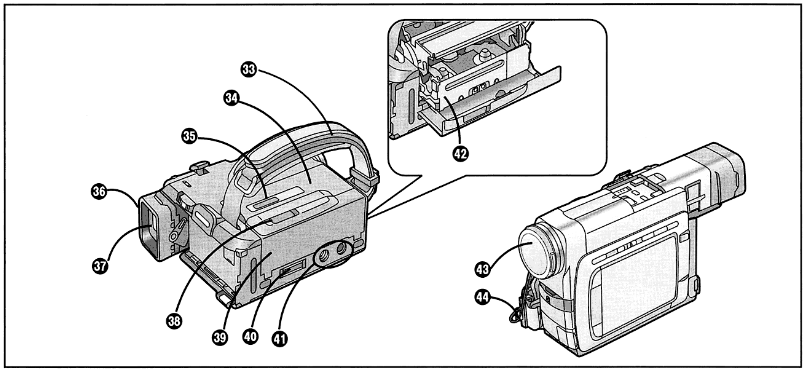
㉘ **Battery Holder** (➔ 11, 32)

㉙ **Recording Start/Stop Button** (➔ 17)

㉚ **Shoulder Strap Holders** (➔ 16)

㉛ **Speaker** (➔ 27)

㉜ **Microphone Socket [MIC]** (➔ 97)
To connect an external microphone or audio equipment. (Connecting to this socket deactivates the built-in microphone.)



(33) Grip Belt (→ 16)

(34) Upper Cassette Compartment Cover (→ 13)

(35) Cassette Compartment Window (→ 13)

(36) Eyecup

(37) Finder (→ 15)

Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the Finder screen. However, this is not a malfunction and does not affect the recorded picture.

(38) Cassette Eject Lever [OPEN/EJECT] (→ 13, 32)

(39) Lower Cassette Compartment Cover (→ 13)

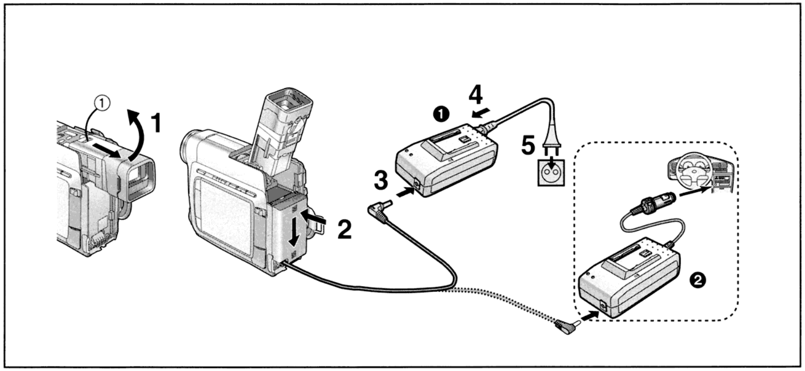
(40) Multi Terminal (→ 31, 32, 71)

(41) Tripod Receptacle
To mount the Movie Camera on an optional tripod.

(42) Cassette Holder (→ 13)

(43) Lens Cap (→ 16, 32, 51)

(44) Lens Cap Holder



The 3 Types of Power Supplies

1) AC Adaptor ❶ (supplied) to supply power from an AC mains socket
2) Car Battery Charger ❷ (optional) to supply power from the cigarette lighter socket in a vehicle
3) Battery (supplied) **(→ 11)**

■ Supplying Power from an AC Mains Socket

1 **Hook your finger on the protruding edge ① of the Finder, slide the Finder backward to its fully extended position and then tilt it upward.**
Do not pull on the Eyecup to extend the Finder.

2 **Insert the battery-shaped connector of the DC Input Lead as shown above into the Battery Holder on the Movie Camera and slide it downward until it locks with a click.**

3 **Connect the other end of the DC Input Lead to the AC Adaptor.**

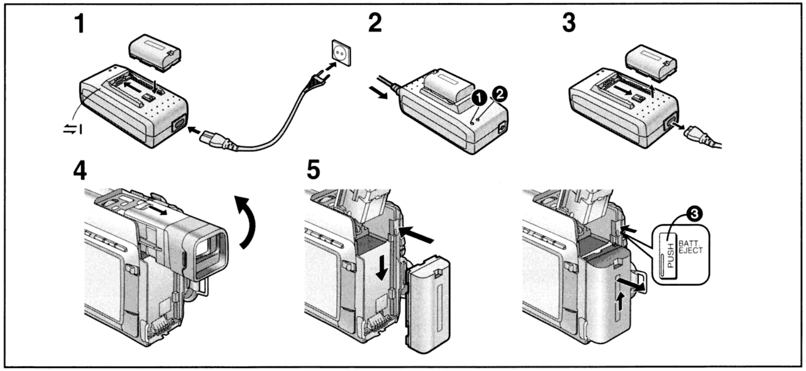
4 **Connect the AC Mains Lead to the AC Adaptor.**

5 **Connect the other end of the AC Mains Lead to an AC mains socket.**
- Before disconnecting the AC Mains Lead, set the [OFF/ON/MODE] Switch on the Movie Camera to [OFF].
- If you use the Movie Camera for a long time, it becomes warm. However, this is normal.

■ Using the Car Battery Charger as Power Source for the Movie Camera

The use of the Car Battery Charger (VW-KBD2E; optional) makes it possible to supply power to the Movie Camera in a car for recording and playback.
It also allows charging the Movie Camera's Battery.

- **After use, be sure to disconnect the Car Battery Charger from the cigarette lighter socket.**
- If the Car Battery Charger is already connected to the cigarette lighter socket when you start the engine, the fuse in the Car Battery Charger's plug may blow out.
- Also read the operating instructions of the Car Battery Charger.



■ Supplying Power with the Battery

Before use, fully charge the Battery.

1 **Place the Battery on the AC Adaptor as shown above and slide it horizontally until it stops.**
- If the DC Input Lead is connected to the AC Adaptor, disconnect it as charging is not possible otherwise.

2 **Securely connect the AC Mains Lead to the AC Adaptor and an AC mains socket.**
- The [POWER] Lamp ❶ lights and then the [CHARGE] Lamp ❷ flashes for a few seconds before it remains lit and charging starts.
- If the [CHARGE] Lamp does not flash even though the Battery is attached, remove the Battery and then re-attach it.
- When the [CHARGE] Lamp goes out, charging is finished.

3 **Remove the Battery by sliding it in the opposite direction of Step 1 above.**
- Also disconnect the AC Mains Lead.

4 **Slide the Finder backward to its fully extended position and then tilt it upward.**

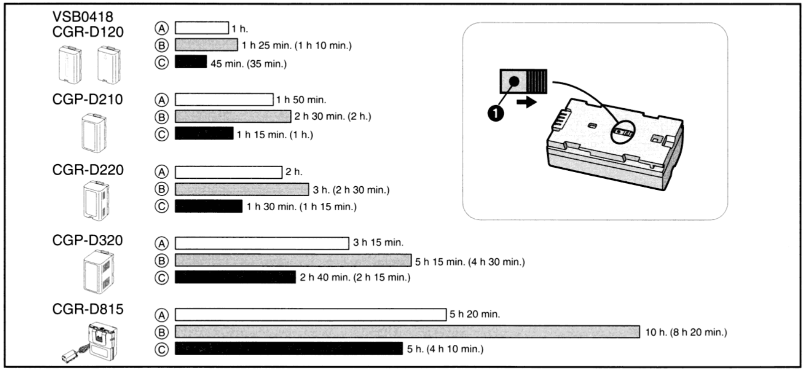
5 **Insert the Battery into the Battery Holder on the Movie Camera and slide it downward until it locks with a click.**

Removing the Battery from the Movie Camera
While pressing the [BATT. EJECT PUSH] Button ❸, slide the Battery upward to remove it.
- Be careful not to drop the Battery by accident.
- Before removing the Battery, set the [OFF/ON/MODE] Switch to [OFF].

■ Charge Lamp [CHARGE]

Flashing:	During checking of the Battery condition
Lit:	During charging
Off:	The Battery is fully charged.

- If you charge the Battery when it is not yet discharged, the [CHARGE] Lamp may flash briefly and then go out. This indicates that the Battery is fully charged. Therefore, this is not an indication of a malfunction.



Charging Time and Maximum Time for Continuous Recording

Ⓐ **Charging Time**
Ⓑ **Maximum Continuous Recording Time**
Ⓒ **Intermittent Recording Time**
(The Intermittent Recording Time indicates the total recording time possible when you start and stop recording repeatedly.)

- **"1 h 10 min." stands for "1 hour and 10 minutes".**
- The Battery Model VSB0418 is supplied.
- The times shown in the above chart are approximations. The figures in parentheses show the recording time when using the LCD Monitor.

The times listed above for your information indicate the duration of recording performed at an ambient temperature of 20°C and 60% relative humidity. The charging time may be longer when you charge the Battery at higher or lower temperature.

- During use and charging, the Battery becomes warm. The Movie Camera, too, becomes warm during use.
- When you repeatedly stop and restart recording, the recording time per Battery is shorter than listed above.
- If you do not use the Battery for a long time, please read "Precautions for Storage" **(➔ 96)**.
- **The Battery models CGP-D110 and CGP-D105 cannot be charged with this AC Adaptor.**

When the [CHARGE] Lamp Flashes Continuously

If the temperature of the Battery is extremely low or extremely high, the [CHARGE] Lamp on the AC Adaptor flashes continuously. It also flashes continuously when some malfunction has occurred in the Battery or the AC Adaptor. For details, read "Notes about the AC Adaptor" **(➔ 92)**.

Using the Optional Batteries Equipped with Charge Confirmation Marker

You can use this marker to easily distinguish between charged and discharged Batteries.
For example, slide the knob so that the red dot (●) ❶ is visible after the charging is completed. (The Supplied Battery VSB0418 is not equipped with a Charge Confirmation Marker.)

Inserting the Cassette

1 Slide the [OPEN/EJECT] Lever ❶ to the right until it locks with a click and simultaneously open the Lower Cassette Compartment Cover completely.
The Cassette Holder slides out.

2 Insert the cassette with its window in position ❸ shown above.

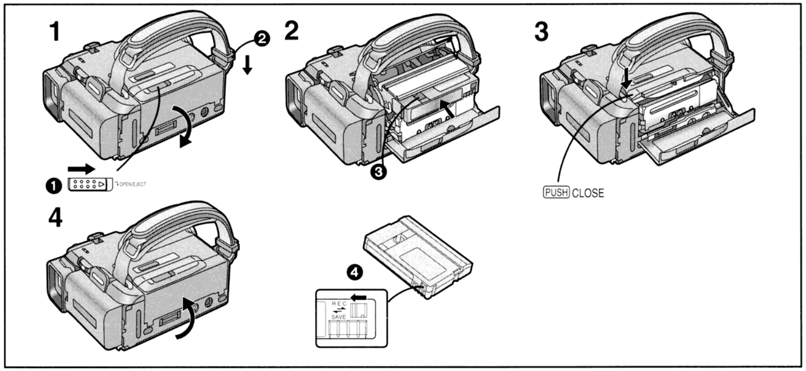
3 Press on the [PUSH CLOSE] mark to close the Upper Cassette Compartment Cover.
The Cassette Holder with the cassette slides back inside. Confirm that the Cassette Holder has retracted completely.

4 Close the Lower Cassette Compartment Cover.

- If the AC Adaptor or Battery is used to supply power, it is possible to insert or eject the cassette without turning on the Movie Camera.
- When opening or closing the Cassette Compartment, push down the buckle ❷ of the Grip Belt in the direction of the arrow so that it does not obstruct the opening and closing of the Cassette Compartment.
- When inserting the cassette, make sure it faces in the right direction and then push it in until it stops.
- When you insert a cassette onto which you have recorded before, use the Camera Search Function **(➔ 33)** to search for the position from which you want to continue recording.
- When you insert a new cassette, rewind the tape to the beginning before starting to record.

Preventing Accidental Erasure of Recordings

Opening the cassette's erasure prevention slider ❹ (sliding it in the direction of the [SAVE] arrow) prevents recording. To record again, close the erasure prevention slider (slide it in the direction of the [REC] arrow).



If the Cassette Holder Does Not Slide Back in

- Press on the [PUSH CLOSE] mark and close the Upper Cassette Compartment Cover securely.
- Turn the Movie Camera off and then on again.
- Check if the Battery is discharged.

If the Cassette Holder Does Not Slide Out

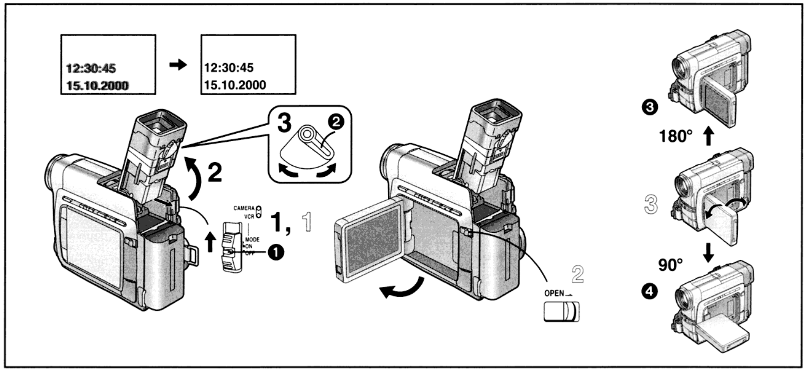
- Close the Lower Cassette Compartment Cover completely and then open it again.
- Check if the Battery is discharged.

■ LP Mode

The desired recording speed can be selected with [REC SPEED] on the [OTHER FUNCTIONS] Sub-Menu.

If you select the LP Mode, the possible recording time is 1.5 times as long as in the SP Mode.
Recording in the LP mode does not deteriorate the picture quality. However, the playback picture may contain mosaic-like patterns and certain functions may be restricted.

- In the following cases, mosaic-like patterns may appear in the playback picture, or the picture may not be played back correctly:
  - When a cassette recorded in the LP Mode on this Movie Camera is played back on other digital video equipment.
  - When a cassette recorded in the LP Mode on other digital video equipment is played back on this Movie Camera.
  - When a cassette recorded in the LP Mode on this Movie Camera is played back on digital video equipment not featuring the LP Mode.
  - In the Slow Motion or Still Advance Playback Mode. **(➔ 29, 30)**
  - When using the Camera Search Function. **(➔ 33)**
- As the recording track width in the LP Mode is smaller than the head width, recording new sound onto an already recorded cassette (audio dubbing) **(➔ 63)** is not possible.



Using the Finder

Before using the Finder, adjust it to your eyesight so that the indications in the Finder are clear and easy to read.

1. **Set the [OFF/ON/MODE] Switch to [ON].**
   While pressing the centre button ❶, slide the switch so that the corresponding Lamp lights.
2. **Slide the Finder backward to its fully extended position and then tilt it upward.**
3. **Adjust by turning the Eyepiece Corrector Lever ❷.**

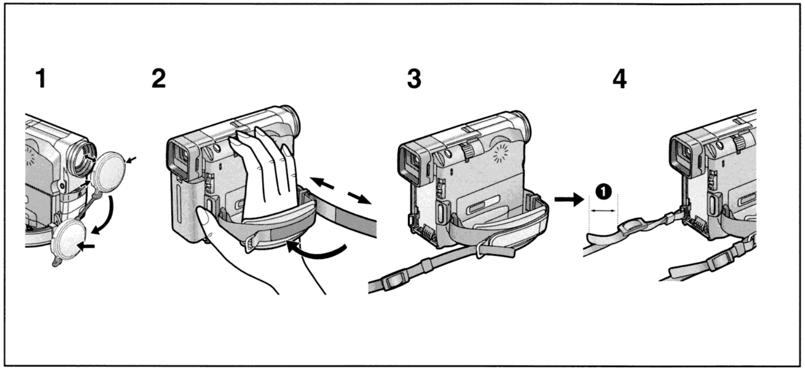
Note:
Do not leave the Finder exposed to direct sunlight, as its magnifying glass could bundle the light beams and seriously heat-damage the Finder.

Using the LCD Monitor

You can also record while viewing the picture on the opened LCD Monitor.

1. **Set the [OFF/ON/MODE] Switch to [ON].**
   While pressing the centre button ❶, slide the switch so that the corresponding Lamp lights.
2. **Slede the [OPEN⎯] Lever and turn out the LCD Monitor by approximately 90° in the direction of the arrow.**
   The Finder turns off.
3. **Adjust the angle of the LCD Monitor according to the recording angle.**
   - The LCD Monitor rotates upward a maximum of 180° ❸ and downward by a maximum of 90° ❹ from its normal vertical position. Trying to forcefully rotate it beyond this range could seriously damage the Movie Camera.

Closing the LCD Monitor
Push the LCD Monitor close until it locks with a click.



Handling the Lens Cap

Before you start recording, remove the Lens Cap.

1. **You can attach the removed Lens Cap to the Grip Belt.**
   When not actually recording, always attach the Lens Cap to the Lens to protect it.

Note:
Do not leave the Lens exposed to direct sunlight, as it could bundle the light beams and seriously heat-damage the CCD-Sensor.

Adjusting the Grip Belt

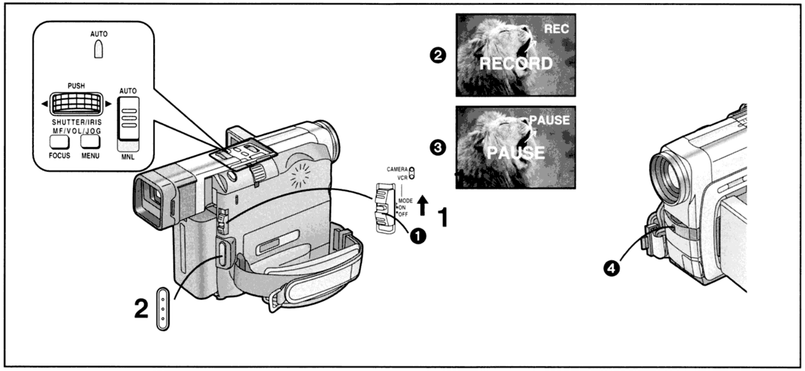
You can adjust the Grip Belt to the size of your hand.

2. **Pass your hand through the Grip Belt and adjust its length. Fold back the end of the Grip Belt to securely fasten the velcro tape closure.**
   When you open or close the Cassette Compartment, push down the buckle of the Grip Belt so that it does not prevent the Cassette Compartment from opening and closing completely.

Attaching the Shoulder Strap

Before you go recording outside, we recommend that you attach the Shoulder Strap to prevent the Movie Camera from dropping accidentally.

3. **Pull the end of the Shoulder Strap through the Shoulder Strap Holder on the Movie Camera.**
4. **Fold the end of the Shoulder Strap back, pull it first through the loop and then the Shoulder Strap Length Adjuster.**
   Pull it out more than 2 cm ❶ from the Shoulder Strap Length Adjuster so that it cannot slip off.



Recording

After setting the [OFF/ON/MODE] Switch to [ON] to turn the Movie Camera on and setting the Mode Selector Switch to [AUTO], you can start recording simply by pressing the Recording Start/Stop Button. In this case, the Movie Camera adjusts the focus and white balance fully automatically.

1. **Set the [OFF/ON/MODE] Switch to [ON].**
   While pressing the centre button ❶, slide the switch so that [CAMERA] Lamp lights.
2. **Press the Recording Start/Stop Button.**
   Recording starts. The [RECORD] Indication appears briefly and then changes to [REC] ❷.

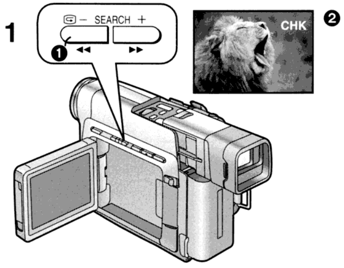
To pause recording:
Press the Recording Start/Stop Button again.
The [PAUSE] Indication appears. ❸

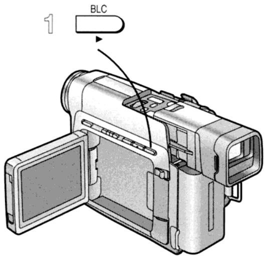
To finish recording:
Set the [OFF/ON/MODE] Switch to [OFF].
It is not necessary to press the centre button in order to slide the switch to [OFF].

- Depending on the light source and recording situation, correct automatic focusing and white balance adjustment may not be possible. In such cases, adjust them manually. Focus: **(→ 52)**; White Balance: **(→ 50, 51)**
- Be sure to remove the Lens Cap before setting the [OFF/ON/MODE] Switch to [ON]. If the Lens Cap is still attached to the Lens when the [CAMERA] Lamp lights, the automatic white balance adjustment **(→ 101)** may not be precise.
- **If you leave the Movie Camera in the Recording Pause Mode for more than 6 minutes, it automatically switches off to protect the tape and to conserve battery power. To resume recording from this condition, set the [OFF/ON/MODE] Switch to [OFF] and then to [ON] again.**

Recording Lamp (Tally Lamp)

The Recording Lamp lights ❹ during recording to let the people in front of the Movie Camera know that recording is being performed. If you set [REC LAMP] on the [OTHER FUNCTIONS] Sub-Menu to [OFF], the Recording Lamp does not light.





Checking If the Picture Is Recorded

(Recording Check)

To play back the final few seconds of the last recorded scene in the Recording Pause Mode.

1 **Press the Recording Check Button [⟲] ❶ briefly in the Recording Pause Mode.**

The [CHK] Indication ❷ appears.

After checking, the Movie Camera returns to the Recording Pause Mode.

- For Recording Check, the Movie Camera must be in the same mode (SP or LP) as used for recording, otherwise the playback picture is distorted.

Recording Backlit Scenes

(Backlight Compensation)

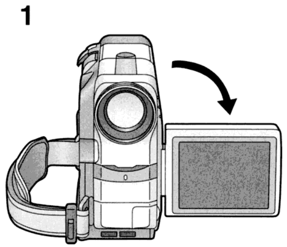
To prevent the backlit subject from being recorded very dark. (Backlight means that the light falls on the subject from behind, i.e. the subject is between the light source and the Movie Camera.)

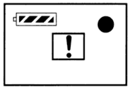
1 **Keep the Backlight Button [BLC] pressed.**

The backlight is being compensated as long as you keep the Button pressed, and the subject is recorded more brightly. (The picture brightens up as a whole.)

Returning to Normal Recording

Release the Backlight Button [BLC].





Recording Yourself

(Recording with the LCD Monitor Facing Forward)

This makes it possible to record yourself while viewing the picture on the LCD Monitor or to show the persons in front of the Movie Camera the picture being recorded.

1 **Open the LCD Monitor and turn it so that it faces forward (lens side).**

Opening the LCD Monitor automatically turns off the Finder. However, when you turn the LCD Monitor forward, the picture also appears in the Finder.

This lets you aim the Movie Camera and view the picture in the Finder, while the persons in front of the Movie Camera can check the picture on the LCD Monitor during recording.

Mirror Mode for the Picture on the LCD Monitor

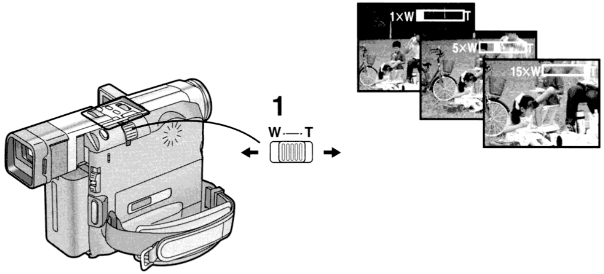
You are used to looking at yourself in the mirror. Therefore, when recording yourself with the LCD Monitor facing forward, the picture (as it is being recorded) might look unusual and distracting. If you prefer to see yourself on the LCD Monitor in the same way as you see yourself in a mirror, i.e. with the sides reversed, set [SELFSHOOT] on the [DISPLAY SETUP] Sub-Menu to [MIRROR]. However, the picture will still be recorded in the normal, non-reversed way.

This Mirror Mode for the picture on the LCD Monitor works only during recording and in the Recording Pause Mode with the LCD Monitor facing forward. Also, it is completely different from the Mirror Mode of the Digital Effects 1 **(→ 41)**.

- In the Mirror Mode, only the following indications are displayed.

●: Recording
●❚❚: Recording Pause
▰▰▰: Remaining Battery Power

When the General Warning/Alarm Indication [!] appears, turn the LCD Monitor backward so that you can confirm the actual Warning/Alarm Indication.



Enlarging Your Subject or Widening the Recording Angle (Zooming In/Out)

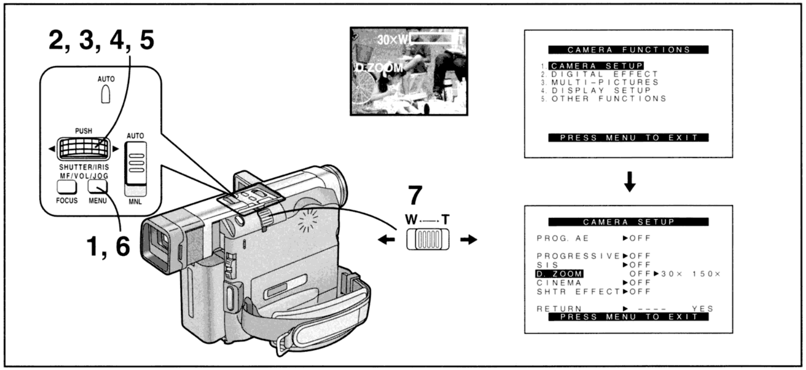
Recording close-ups of your subjects and recording wide-angle shots add special effects to your videos.

1 **To record a wider view (Zooming-out):**
Push the [W/T] Zoom Lever toward [W].
To enlarge your subject (Zooming-in):
Push the [W/T] Zoom Lever toward [T].

- The Zoom Magnification Indication appears for a few seconds.
- As a general rule, the further you push the [W/T] Zoom Lever toward [W] or [T], the faster the zooming speed.
- In the Recording Pause Mode, if you push the [W/T] Zoom Lever toward [W] or [T] until you feel a click, you can zoom between 1× and 15× in an extremely fast 0.5 second. **(Jet Zoom)**
- During recording, zooming between 1× and 15× is possible in as short a time as approximately 1.0 second. However, even if you push the [W/T] Zoom Lever until you feel a click, it is not possible to zoom faster than in 1.0 second. Therefore, we do not recommend that you push the [W/T] Zoom Lever all the way until you feel a click, as a click sound could be recorded in this case.
- During very fast zooming, the picture may temporarily go out of focus.
- When you have zoomed to the tele setting, precise focusing is only possible on subjects no closer than 1.2 metres.

Recording Extra Close-up Shots of Small Subjects (Macro Close-up Function)

When the zoom magnification is 1×, the Movie Camera can focus on subjects down to a distance of approximately 35 mm between lens and subject. This allows recording very small subjects such as insects.


2, 3, 4, 5
AUTO
PUSH
AUTO
SHUTTER/IRIS
MF/VOL/JOG
FOCUS
MENU
MNL
1, 6
30×W
D.ZOOM
7
W — T
CAMERA FUNCTIONS
1 CAMERA SETUP
2 DIGITAL EFFECT
3 MULTI-PICTURES
4 DISPLAY SETUP
5 OTHER FUNCTIONS
PRESS MENU TO EXIT
CAMERA SETUP
PROG. AE ▶OFF
PROGRESSIVE▶OFF
SIS ▶OFF
D. ZOOM OFF▶30× 150×
CINEMA ▶OFF
SHTR EFFECT▶OFF
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Enlarging Your Subjects Even More

(Digital Zooming)

This function is convenient when you want to enlarge a very distant subject even more than is possible with the normal (optical) zoom which offers a magnification range of 1×–15×. For the Digital Zoom Function, you can choose between up to 30× and up to 150× magnification.

1 Press the [MENU] Button.
The [CAMERA FUNCTIONS] Main-Menu appears.

2 Turn the [PUSH] Dial to select [CAMERA SETUP].

3 Press the [PUSH] Dial.
The [CAMERA SETUP] Sub-Menu appears.

4 Turn the [PUSH] Dial to select [D.ZOOM].

5 Press the [PUSH] Dial to select [30×] or [150×].

- **30×**: Digital zooming up to 30×.
- **150×**: Digital zooming up to 150×.
- If [PROGRESSIVE] on the [CAMERA SETUP] Sub-Menu is set to [ON], it is not possible to select either of these settings.

6 Press the [MENU] Button to exit the menu.

7 Push the [W/T] Zoom Lever toward [W] or [T] to zoom in or out on the subject.

- The higher the Digital Zoom Magnification is, the lower is the picture quality.

Cancelling the Digital Zoom Function
Set [D.ZOOM] on the [CAMERA SETUP] Sub-Menu to [OFF].

- If you zoom to 15× or higher (digital zoom range) when [PROGRESSIVE] on the [CAMERA SETUP] Sub-Menu is set to [AUTO], the Progressive Photoshot Mode is automatically cancelled.
- When you have zoomed to 15× or higher (digital zoom range), manually adjusting the white balance or selecting any of the preset white balance modes is not possible.

Recording Still Pictures on the Cassette (Photoshot)

With this function, you can record still pictures with sound for approximately 7 seconds each.

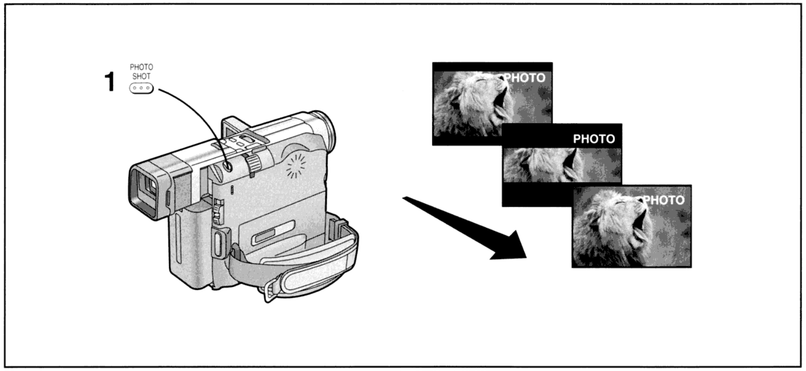
1 Press the [PHOTO SHOT] Button in the Recording Pause Mode.
The Movie Camera records a still picture for approximately 7 seconds and then switches back to the Recording Pause Mode.

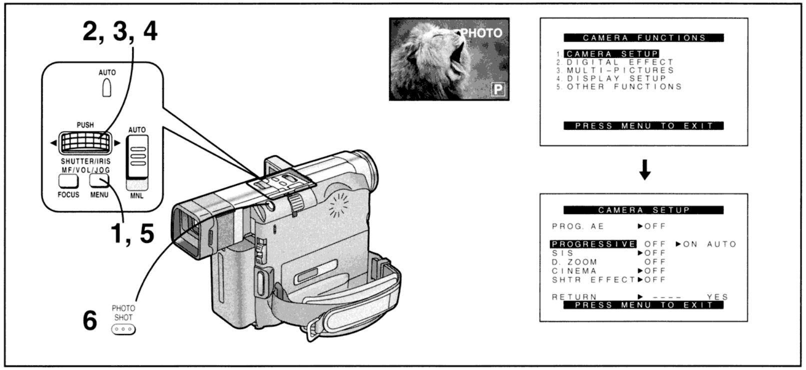
- It is not possible to use the Photoshot Function during a normal recording.
- If you set [SHTR EFFECT] on the [CAMERA SETUP] Sub-Menu to [ON], the screen blinks briefly and a simulated shutter click sound can be heard when you press the [PHOTO SHOT] Button. This audiovisual effect is also recorded.
- With the still pictures that you have recorded in the Photoshot Mode, you can do the following:
  - Index Search **(➜ 35, 36, 37)**
    (However, searching for the picture(s) recorded at the beginning of the tape may not be possible.)
  - Automatic printing **(➜ 76)**
- The visual shutter effect and click sound may occur with slight delay after recording of the still picture has started.
- The picture quality deteriorates slightly.

Continuous Photoshot

If you set [SHTR EFFECT] on the [CAMERA SETUP] Sub-Menu to [ON] and keep the [PHOTO SHOT] Button pressed in the Recording Pause Mode, the Movie Camera automatically records still pictures successively at intervals of approximately 0.7 seconds until you release the button.

- One more still picture may be recorded after you release the [PHOTO SHOT] Button.
- As the still pictures recorded in the Continuous Photoshot Mode are not marked with photoshot index signals, they cannot be located by using the Photoshot Index Search Function and printed with the Auto Print Function.
- When [PROGRESSIVE] on the [CAMERA SETUP] Sub-Menu is set to [ON] or [AUTO], the Continuous Photoshot Function cannot be used.


1
PHOTO SHOT
PHOTO
PHOTO
PHOTO


2, 3, 4
AUTO
PUSH
AUTO
SHUTTER/IRIS
MF/VOL/JOG
FOCUS
MENU
MNL
1, 5
6
PHOTO SHOT
PHOTO
P
CAMERA FUNCTIONS
1 CAMERA SETUP
2 DIGITAL EFFECT
3 MULTI-PICTURES
4 DISPLAY SETUP
5 OTHER FUNCTIONS
PRESS MENU TO EXIT
CAMERA SETUP
PROG. AE ▶OFF
PROGRESSIVE OFF ▶ON AUTO
SIS ▶OFF
D. ZOOM OFF
CINEMA ▶OFF
SHTR EFFECT▶OFF
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Recording Still Pictures on the Cassette (Continued)

■ Progressive Photoshot

The Progressive Photoshot Function lets you record still pictures with higher resolution than the normal Photoshot Function. This is ideal for example for pictures that you want to print with a Digital Video Printer or import into a computer.

1 Press the [MENU] Button.
The [CAMERA FUNCTIONS] Main-Menu appears.

2 Turn the [PUSH] Dial to select [CAMERA SETUP] and then press the [PUSH] Dial.
The [CAMERA SETUP] Sub-Menu appears.

3 Turn the [PUSH] Dial to select [PROGRESSIVE].

4 Press the [PUSH] Dial to select [ON] or [AUTO].

5 Press the [MENU] Button to exit the menu.
The [P] Indication appears.

6 Press the [PHOTO SHOT] Button in the Recording Pause Mode.
The Movie Camera records a still picture for approximately 7 seconds and then switches back to the Recording Pause Mode.

- With this function, you can take still pictures that are recorded as frames with higher resolution. However, this Frame Mode cannot be used for normal recording of motion pictures.
- When [PROGRESSIVE] on the [CAMERA SETUP] Sub-Menu is set to [ON] or [AUTO], the Continuous Photoshot Function cannot be used.
- When you press the [PHOTO SHOT] Button, the Movie Camera emits a click sound. However, this is normal and not a malfunction.

Notes about the Settings for [PROGRESSIVE]

When the [P] Indication is displayed, you can use the Progressive Photoshot Function.

- When you record a still picture in the Progressive Photoshot Mode while [PROG.AE] on the [CAMERA SETUP] Sub-Menu is set to Sports Mode [🏃] **(→ 39)** or Portrait Mode [👥] **(→ 39)**, the picture brightness may vary from picture to picture.

When [PROGRESSIVE] Is Set to [ON]:

You can always use the Progressive Photoshot Function.

In this case, however, the following functions are deactivated:

- Digital Effect Modes in [EFFECT1] **(→ 41)**
- Digital Zoom [D.ZOOM] **(→ 21)**
- Shutter Speeds of 1/750 s and faster **(→ 53)**

When [PROGRESSIVE] Is Set to [AUTO]:

In the following cases, using the Progressive Photoshot Function is not possible.

- When the zoom magnification is approximately 15× or higher.
- When the shutter speed is 1/750 s or faster.
- When [EFFECT1] is set to [WIPE], [MIX], [STROBE], [GAINUP], [TRACER], [MOSAIC] or [MIRROR].
- When a picture is displayed in the Multi-Picture Mode or in the Picture-in-Picture Mode.

Recording in the Cinema Mode

(Cinema Mode)

This mode lets you record in the cinema-like wide-screen format.

1 Press the [MENU] Button.

The [CAMERA FUNCTIONS] Main-Menu appears.

2 Turn the [PUSH] Dial to select [CAMERA SETUP] and then press the [PUSH] Dial.

The [CAMERA SETUP] Sub-Menu appears.

3 Turn the [PUSH] Dial to select [CINEMA].

4 Press the [PUSH] Dial to select [ON].

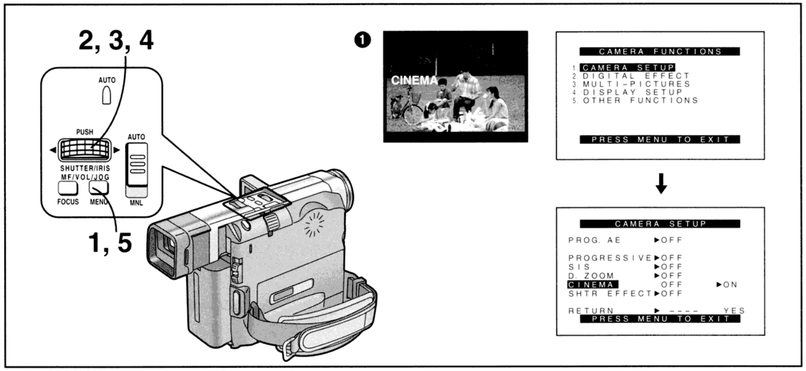
Black bars appear at the top and bottom of the screen ❶.

5 Press the [MENU] Button to exit the menu.

Cancelling the Cinema Mode

Set [CINEMA] on the [CAMERA SETUP] Sub-Menu to [OFF].

- Using the Cinema Mode does not widen the recording angle.
- A picture displayed in the Multi-Picture Mode cannot be displayed in the Cinema Mode.
- If you play back the picture recorded in the Cinema Mode on a wide-screen (16:9) format TV, the size of the playback picture is automatically adjusted to match the format of the TV screen. For details, read the TV's operating instructions.


2, 3, 4
AUTO
PUSH
AUTO
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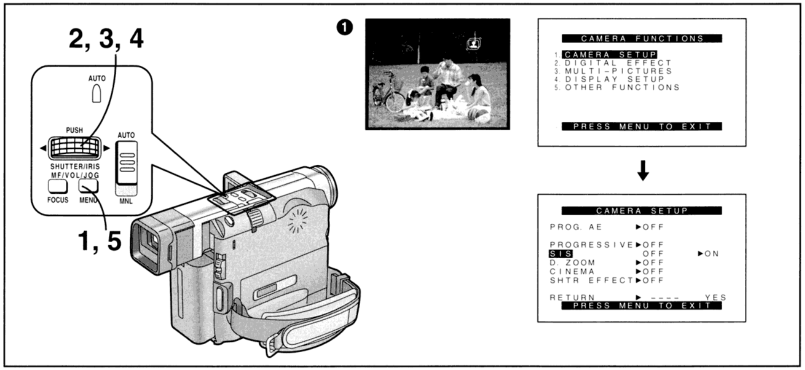
MF/VOL/JOG
FOCUS
MENU
MNL
1, 5
❶
CINEMA
CAMERA FUNCTIONS
1 CAMERA SETUP
2 DIGITAL EFFECT
3 MULTI-PICTURES
4 DISPLAY SETUP
5 OTHER FUNCTIONS
PRESS MENU TO EXIT
CAMERA SETUP
PROG. AE ▶OFF
PROGRESSIVE▶OFF
SIS ▶OFF
D. ZOOM ▶OFF
CINEMA OFF ▶ON
SHTR EFFECT▶OFF
RETURN ▶ ---- YES
PRESS MENU TO EXIT


2, 3, 4
AUTO
PUSH
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SHUTTER/IRIS
MF/VOL/JOG
FOCUS
MENU
MNL
1, 5
❶
CAMERA FUNCTIONS
1 CAMERA SETUP
2 DIGITAL EFFECT
3 MULTI-PICTURES
4 DISPLAY SETUP
5 OTHER FUNCTIONS
PRESS MENU TO EXIT
CAMERA SETUP
PROG. AE ▶OFF
PROGRESSIVE▶OFF
SIS OFF ▶ON
D. ZOOM ▶OFF
CINEMA ▶OFF
SHTR EFFECT▶OFF
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Recording with Minimised Camera Shake (Super Image Stabilizer)

In recording situations where shaking of the Movie Camera is likely to happen, for example when you have zoomed in on a distant subject or when you record while walking, you can use this function to stabilize the image.

- In case of very strong camera shake, it may not be possible to stabilize the picture.

1 Press the [MENU] Button.

The [CAMERA FUNCTIONS] Main-Menu appears.

2 Turn the [PUSH] Dial to select [CAMERA SETUP] and then press the [PUSH] Dial.

The [CAMERA SETUP] Sub-Menu appears.

3 Turn the [PUSH] Dial to select [SIS].

4 Press the [PUSH] Dial to select [ON].

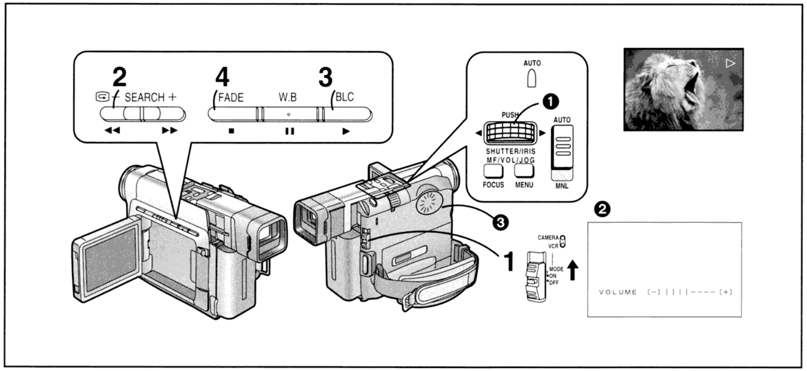
5 Press the [MENU] Button to exit the menu.

The [▣] Indication ❶ appears.

- In a dimly lit place, the Super Image Stabilizer Function may not work. In this case, the [▣] Indication flashes.
- If [EFFECT1] on the [DIGITAL EFFECT] Sub-Menu has been set to [GAINUP], the Super Image Stabilizer Function cannot be used. In this case, the [▣] Indication flashes.
- Under fluorescent lamps, the picture brightness may fluctuate and the colours may be unnatural.
- After-image distortion may occur.
- When you use a tripod, we recommend to turn the Super Image Stabilizer Function off.

Cancelling the Super Image Stabilizer Function

Set [SIS] on the [CAMERA SETUP] Sub-Menu to [OFF].



Viewing the Just Recorded Scenes on the Movie Camera (Playback)

You can play back recorded scenes right after recording.

1 Slide the [OFF/ON/MODE] Switch from the [ON] position to put the Movie Camera in the VCR Mode.

- The [VCR] Lamp lights.

2 Press the Rewind Button [◀◀] to rewind the tape.

- Rewind the tape to the point where the recording was started.
- If the tape reaches the beginning, rewinding automatically stops.

3 Press the Play Button [▶] to start playback.

4 To stop playback: Press the Stop Button [■].

■ Adjusting the Sound Volume

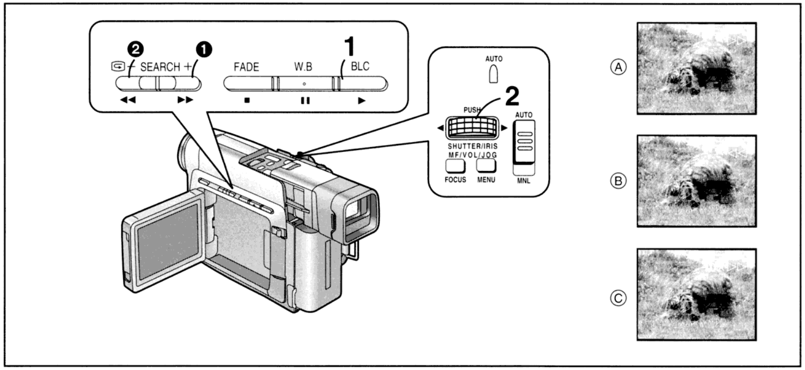
Keep the [PUSH] Dial ❶ pressed until the [VOLUME] Indication ❷ appears. Then, turn the [PUSH] Dial to adjust the volume. After adjusting, press the [PUSH] Dial to make the [VOLUME] Indication disappear.

To adjust the volume with the Remote Controller, press the [T] or [W] Button to make the [VOLUME] Indication appear. You can then increase the volume by pressing the [T] Button or decrease it by pressing the [W] Button. A few seconds after finishing the adjustment, the [VOLUME] Indication disappears.

- Only the volume of the sound from the Movie Camera's built-in speaker ❸ can be adjusted.
- When using the Playback Zoom Function, it is not possible to adjust the sound volume.

■ Repeat Playback

- If you keep the Playback Button [▶] pressed for more than 5 seconds, the Movie Camera switches over to the Repeat Playback Mode and the [R ▷] Indication appears. To cancel the Repeat Playback Mode, turn the [OFF/ON/MODE] Switch to [OFF].



Searching for a Scene That You Want to Play Back

Cue Playback Ⓐ

Keep the Cue Button [▶▶] ❶ pressed during playback.

Review Playback Ⓑ

Keep the Review Button [◀◀] ❷ pressed during playback.

Search Lock Function

For longer Cue or Review Playback, press the Cue Button [▶▶] or the Review Button [◀◀] only briefly. As this locks the search function, you do not need to keep the button pressed for a long time.

- To resume normal playback, press the Play Button [▶].
- In Cue and Review Playback, pictures with fast-moving subjects may contain mosaic-like patterns.

Hyper Check Function

- If you press the Fast-forward Button [▶▶] during fast-forwarding of the tape or the Rewind Button [◀◀] during rewinding of the tape, Cue Playback or Review Playback continues for as long as you keep the Button pressed.
- At the beginning and end of Cue Playback or Review Playback, some momentary picture distortion may occur.

Variable Speed Search Function Ⓒ

It is possible to change the speed of Cue Playback or Review Playback.

1 Press the Play Button [▶] during playback.

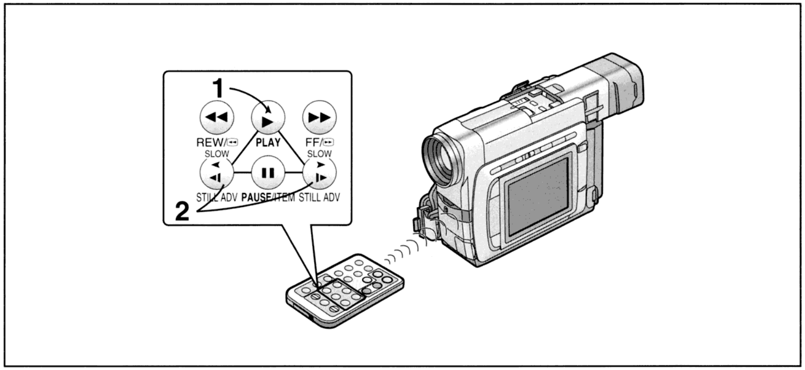
2 Turn the [PUSH] Dial to select the desired search speed.

The Variable Speed Search Function offers the following 6 different playback speeds both in forward and reverse directions: 1/5× (slow playback in SP Mode only), 1/3× (slow playback in LP Mode only), 1×, 2×, 5×, 10×, 20×

Returning to Normal Playback

Press the Play Button [▶].
Playback continues at normal speed.

- During Variable Speed Search, mosaic-like patterns appear in the picture.
- When using the Variable Speed Search Function, the sound is muted.



Playing Back in Slow Motion

(Slow Motion Playback)

1 Press the Play Button [▶].

2 Press the Slow Motion/Still Advance Button [◀❙] or [❙▶] on the Remote Controller.

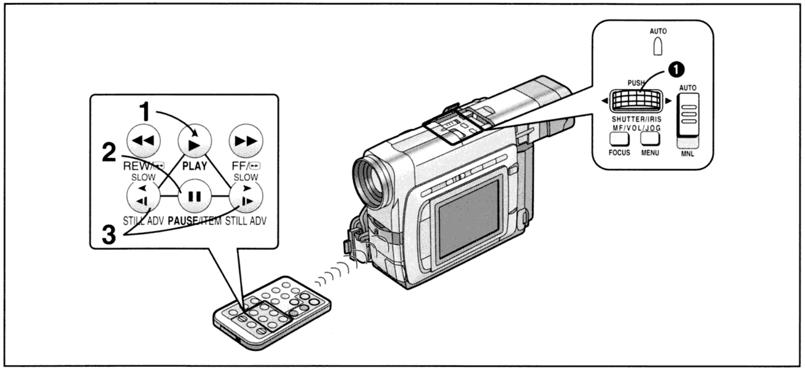
Pressing the [◀❙] Button starts slow motion playback in reverse direction, and pressing the [❙▶] Button starts slow motion playback in forward direction.

Scenes recorded in the SP Mode are played back at approximately 1/5th of the normal speed.
Scenes recorded in the LP Mode are played back at approximately 1/3rd of the normal speed.

- During slow motion playback in reverse direction, the Time Code Indication may not be accurate.
- When you play back the picture recorded in the Picture-in-Picture Mode (**→ 47**) or Multi-Picture Mode (**→ 44, 45**), the picture may shake vertically.

Resuming Normal Playback

Press the Play Button [▶].
Playback continues at normal speed.



Playing Back Still Pictures and Advancing Them One by One

(Still Playback/Still Advance Playback)

You can freeze the action during playback and advance the still pictures one by one.

1 Press the Play Button [►].

2 Press the Pause Button [❚❚].
The playback picture stops in the Still Playback Mode.

3 Press the Slow Motion/Still Advance Button [◄Ⅰ] or [Ⅰ►] on the Remote Controller.
Pressing the [◄Ⅰ] Button advances the still picture one by one in reverse direction. Pressing the [Ⅰ►] Button advances the still picture one by one in forward direction.

- Each press of the [◄Ⅰ] Button advances to the next still picture in reverse direction. Each press of the [Ⅰ►] Button advances to the next still picture in forward direction. Keeping either button pressed continuously advances the still pictures one by one until you release the button.
- If you leave the Movie Camera in the Still Playback Mode for more than 6 minutes, it switches over to the Stop Mode to protect the video heads against excessive wear.
- During Still Advance Playback, the Time Code Indication may not be accurate.
- During Still Playback, adjusting the sound volume is not possible.

Resuming Normal Playback

Press the Play Button [►].
Playback continues at normal speed.

Using the Jog Dial (Jog Playback)

By turning the Jog Dial ([PUSH] Dial) ❶ on the Movie Camera in the Still Playback Mode, you can advance the still pictures one by one in forward or reverse direction.

Playing Back on a TV

(With the Output Terminal Box [AV ONE TOUCH STATION] Attached)

Attaching the Output Terminal Box [AV ONE TOUCH STATION] to the Movie Camera makes it possible to play back recorded scenes on a TV.

1 Attach the Output Terminal Box [AV ONE TOUCH STATION]. (➜ 71)

2 Connect the Video and Audio output Socket on the Output Terminal Box [AV ONE TOUCH STATION] with the Scart Input Socket (or separate Video and Audio Input Sockets) on the TV.
Use the AV Cable (PHONO-PHONO) ❶ to connect to the TV. If your TV is equipped with an S-Video Socket, also connect the S-Video Cable ❷.

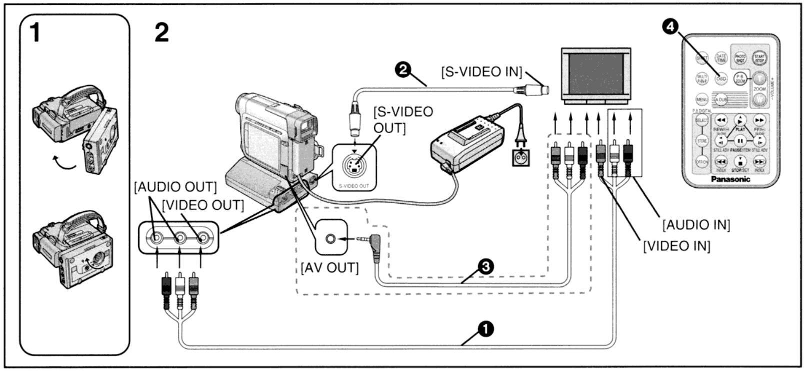
Easy Playback on a TV

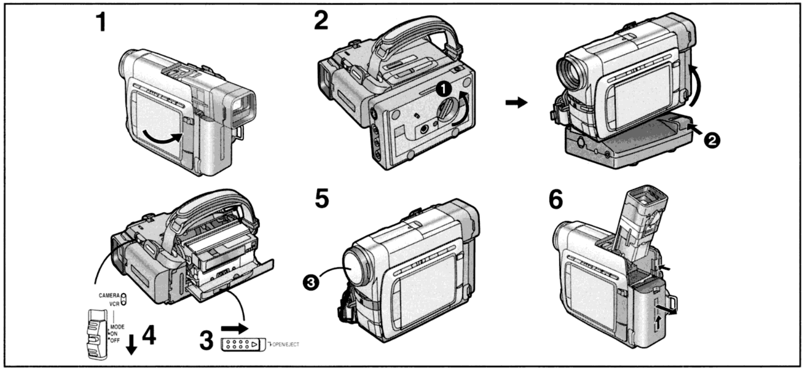
Instead of connecting the Movie Camera to the TV through the Output Terminal Box [AV ONE TOUCH STATION], as described in step 2 above, you can use the AV Cable (PHONO-M3) ❸ to connect [AV OUT] on the Movie Camera directly to the Video and Audio Input Sockets on the TV.
The plug for the [AV OUT] Socket must be inserted completely.

- Do not connect both the supplied AV Cables to the TV at the same time.
- Before connecting, turn off both the Movie Camera and the TV.
- If a cassette recorded with a copyright protection signal (Copy Guard) is played back, the picture is distorted by mosaic-like patterns. However, scenes recorded with this Movie Camera do not contain a copyright protection signal.

Making the Indications Appear on the TV Screen

Press the [OSD] Button ❹ on the Remote Controller.
The On-Screen Indications also appear on the TV screen.





After Use

1 Close the LCD Monitor.

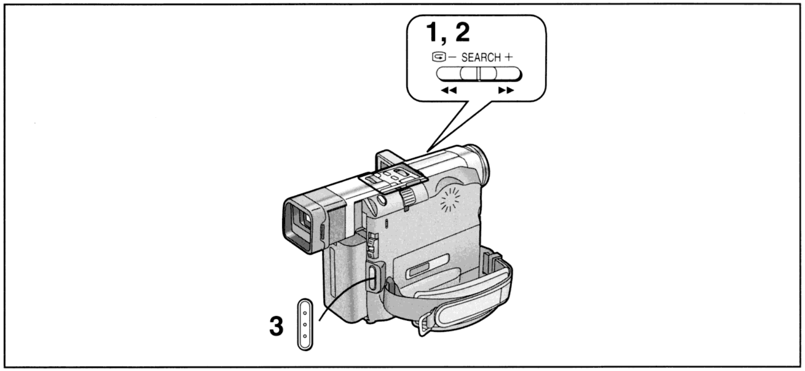
2 Loosen the locking screw ❶ and remove the Output Terminal Box [AV ONE TOUCH STATION] while pressing the [PUSH RELEASE] Button ❷.
Hold both the Movie Camera and the Output Terminal Box firmly to prevent them from dropping.

3 Take out the cassette. (➜ 13)

4 Set the [OFF/ON/MODE] Switch to [OFF].

5 Attaching the Lens Cap
After use, attach the supplied Lens Cap ❸ to the Lens to protect it.

6 Remove the Battery and retract the Finder. (➜ 11)



Viewing Recorded Scenes During Recording Pause (Camera Search)

You can view recorded scenes when the Movie Camera is in the Recording Pause Mode.
The Camera Search Function is convenient to search for a scene from which you want to start recording a new scene with smooth scene-to-scene transition.

1 Keep the Reverse Search Button [−SEARCH] or the Forward Search Button [SEARCH+] pressed for more than 1 second.
Pressing the [−SEARCH] Button plays back the picture in reverse direction.
Pressing the [SEARCH+] Button plays back the picture in forward direction.

Starting to Record from the Desired Position

2 Release the pressed Search Button.
The Movie Camera is in the Recording Pause Mode.

3 Press the Recording Start/Stop Button to start recording.
The Movie Camera starts recording a new scene with smooth scene-to-scene transition.

- In the Camera Search Mode, the picture may contain mosaic-like patterns. However, this is a phenomenon particular to digital video and completely normal.
- If the Recording Speed Mode (SP/LP) of the previous and the new recording are different, the playback picture may be distorted.

Searching for the End of the Recorded Part on a Cassette (Blank Search)

With the Blank Search Function, you can quickly locate the end of the recorded part on a cassette (or a blank part between recordings).

1 Slide the [OFF/ON/MODE] Switch from the [ON] position to put the Movie Camera in the VCR Mode.
The [VCR] Lamp lights.

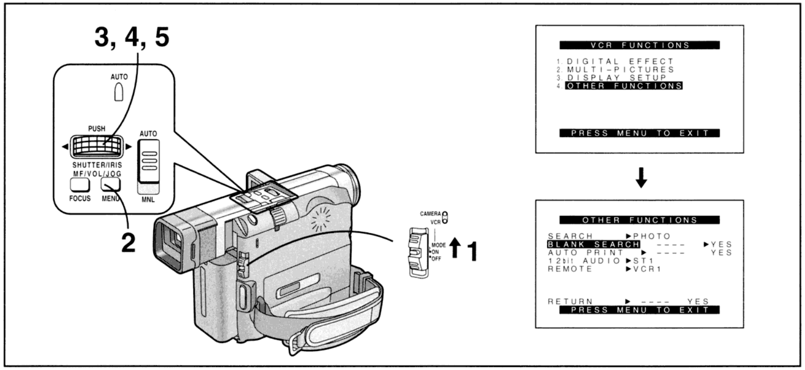
2 Press the [MENU] Button.
The [VCR FUNCTIONS] Main-Menu appears.

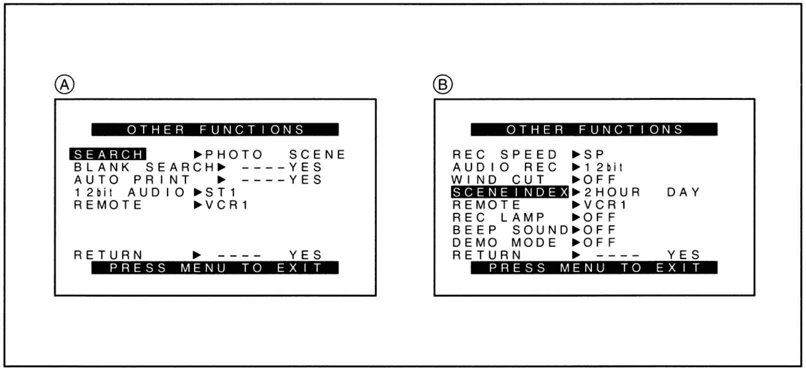
3 Turn the [PUSH] Dial to select [OTHER FUNCTIONS] and then press the [PUSH] Dial.
The [OTHER FUNCTIONS] Sub-Menu appears.

4 Turn the [PUSH] Dial to select [BLANK SEARCH].

5 Press the [PUSH] Dial to select [YES].
Approximately 1 second before the end of the last recorded scene, the Movie Camera switches over to the Still Playback Mode.

- If there is no blank part on a cassette, the Movie Camera stops at the end of the tape.
- If you set the [OFF/ON/MODE] switch to [CAMERA] and then start recording after the Blank Search has finished, the new scene will be joined to the end of the last recorded scene with a smooth transition.
- To cancel the Blank Search before it finishes, press the [■] Button.





Ⓐ

```
        OTHER FUNCTIONS
SEARCH       ▶PHOTO    SCENE
BLANK SEARCH▶ ----YES
AUTO PRINT   ▶ ----YES
12bit AUDIO  ▶ST1
REMOTE       ▶VCR1


RETURN       ▶ ----    YES
        PRESS MENU TO EXIT
```

Ⓑ

```
        OTHER FUNCTIONS
REC SPEED   ▶SP
AUDIO REC   ▶12bit
WIND CUT    ▶OFF
SCENE INDEX▶2HOUR    DAY
REMOTE      ▶VCR1
REC LAMP    ▶OFF
BEEP SOUND▶OFF
DEMO MODE   ▶OFF
RETURN      ▶ ----    YES
        PRESS MENU TO EXIT
```

Searching for the Beginning of Recorded Scenes Marked with Index Signal (Index Search)

To allow easy searching for desired scenes, this Movie Camera automatically records index signals during recording as follows:

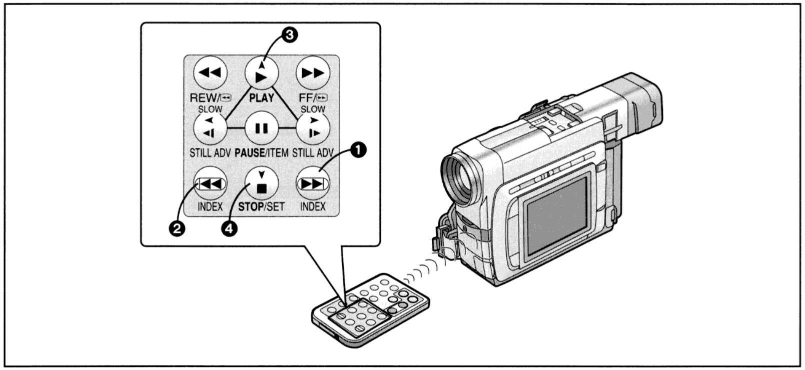
❶ Photoshot Index Signal
To search for still pictures recorded in the Photoshot Mode **(➜ 22)** and to use for automatic printing **(➜ 76)**.
A photoshot index signal is automatically recorded every time you record a still picture in the Photoshot Mode.
- However, in the Continuous Photoshot Mode **(➜ 22)**, no photoshot index signals are recorded.

❷ Scene Index Signal
To search for the beginning of recorded scenes.
A scene index signal is automatically recorded in the following cases:
- When you start recording after inserting a cassette. However, if you switch the Movie Camera from the VCR Mode over to the Camera Mode or set the date and/or time before you start recording, no index signal is recorded.
- According to the setting of [SCENEINDEX] on the [OTHER FUNCTIONS] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu:

[2HOUR]: An index signal is recorded when recording is restarted after a lapse of more than 2 hours.
[DAY]: An index signal is recorded when recording is restarted after the date has changed since the last recording.

(While an index signal is being recorded, the [INDEX] Indication flashes for a few seconds.)

Ⓐ: [OTHER FUNCTIONS] Sub-Menu in the VCR Mode
Ⓑ: [OTHER FUNCTIONS] Sub-Menu in the Camera Mode



Searching for Photoshot Pictures

(Photoshot Index Search)

- Slide the [OFF/ON/MODE] Switch from the [ON] position to put the Movie Camera in the VCR Mode.
- Set [SEARCH] on the [OTHER FUNCTIONS] Sub-Menu to [PHOTO].

Photoshot Index Search in Forward Direction

Press the Index Button [▶▶|] ❶ on the Remote Controller.

Photoshot Index Search in Reverse Direction

Press the Index Button [|◀◀] ❷ on the Remote Controller.

- At every press of the corresponding button, the tape is fast-forwarded or rewound to the next still picture recorded in the Photoshot Mode.

After reaching the next still picture, the still picture is played back continually, however the sound only for approximately 4 seconds. (If you leave the Movie Camera in the Still Playback Mode for more than 6 minutes, it switches over to the Stop Mode to protect the video heads against excessive wear.)

- The Photoshot Index Search may not work correctly for still pictures recorded near the beginning of the tape.
- As no photoshot index signals are recorded for still pictures recorded in the Continuous Photoshot Mode **(→ 22)**, the Photoshot Index Search Function cannot be used to search for these still pictures.
- If you keep the [|◀◀] or [▶▶|] Button pressed for more than 2 seconds, the Intro Search Function is activated and it plays back all still pictures recorded in the Photoshot Mode on the cassette one after another for a few seconds each. (To cancel the Intro Search Function, press the Play Button [▶] ❸ or the Stop Button [■] ❹.)

Searching for the Beginning of Recorded Scenes

(Scene Index Search)

- Slide the [OFF/ON/MODE] Switch from the [ON] position to put the Movie Camera in the VCR Mode.
- Set [SEARCH] on the [OTHER FUNCTIONS] Sub-Menu to [SCENE].

Scene Index Search in Forward Direction

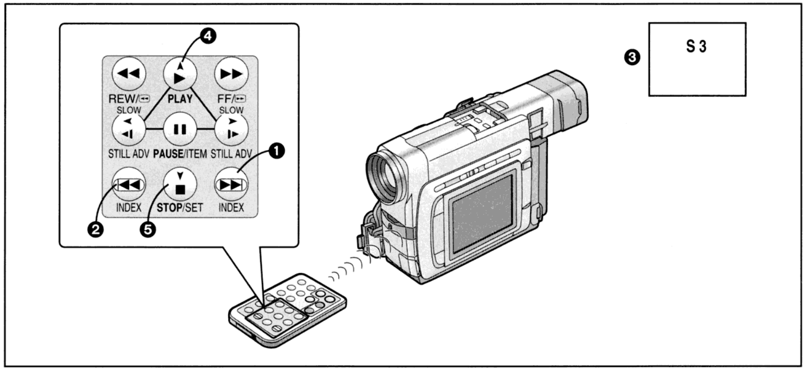
Press the Index Button [▶▶|] ❶ on the Remote Controller.

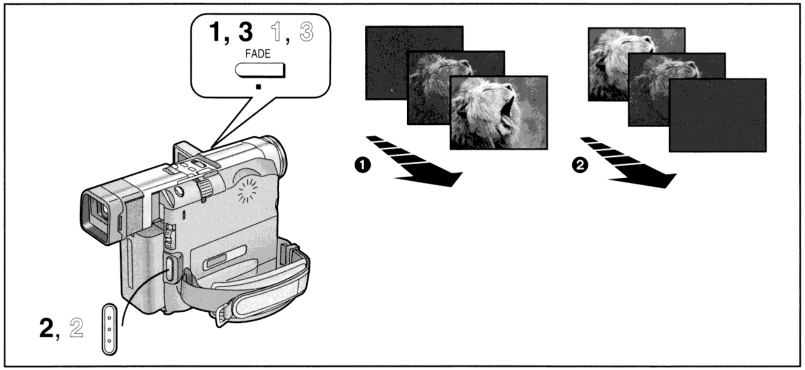
Scene Index Search in Reverse Direction

Press the Index Button [|◀◀] ❷ on the Remote Controller.

- When you briefly press the corresponding button once, the [S 1] Indication appears and the search for the next scene marked with an index signal starts. After the Scene Index Search has started, every time you press the button, the indication changes successively from [S 2] to [S 9], and the beginning of the scene corresponding to the selected number is located. ❸ After reaching the desired scene, playback starts automatically. (At a time, Scene Index Search in forward or reverse direction is possible up to the ninth scene marked with index signal from the present tape position.)

- If the interval between two scene index signals is less than 1 minute, the Scene Index Search may not work correctly.
- The Scene Index Search may not work correctly for scenes recorded near the beginning of the tape.
- If you keep the [|◀◀] or [▶▶|] Button pressed for more than 2 seconds, the Intro Search Function is activated and it plays back the beginning of all scenes marked with an index signal on the cassette one after another for a few seconds each. (To cancel the Intro Search Function, press the Play Button [▶] ❹ or the Stop Button [■] ❺.)





Fading In/Out

Fading In ❶

Fading-in lets you make the picture and sound appear gradually from a black screen at the beginning of a scene.

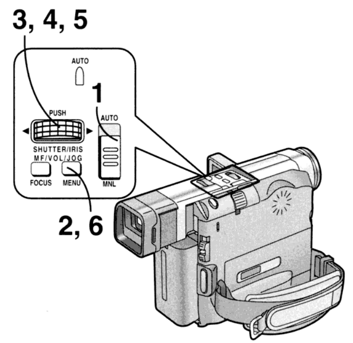
1. **With the Movie Camera in the Recording Pause Mode, keep the Fade Button [FADE] pressed.**
   The picture gradually disappears.
2. **When the picture has completely disappeared, press the Recording Start/Stop Button to start recording.**
3. **Approximately 3 seconds after the recording has started, release the Fade Button [FADE].**
   The picture gradually appears again.

Fading out ❷

Fading-out lets you make the picture and sound disappear gradually into a black screen at the end of a scene.

1. **During recording, keep the Fade Button [FADE] pressed.**
   The picture gradually disappears.
2. **After the picture has completely disappeared, press the Recording Start/Stop Button to stop recording.**
   The Movie Camera is in the Recording Pause Mode.
3. **Release the Fade Button [FADE].**

Fading-in and fading-out cannot be used when recording still pictures in the Photoshot or Multi-Picture Mode, and for the small still picture in the Picture-in-Picture Mode.



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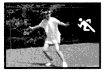
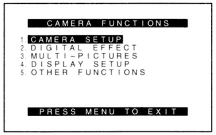


❷

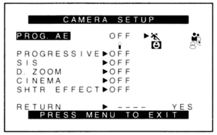
❸

❹

❺



CAMERA FUNCTIONS
1 CAMERA SETUP
2 DIGITAL EFFECT
3 MULTI-PICTURES
4 DISPLAY SETUP
5 OTHER FUNCTIONS
PRESS MENU TO EXIT



CAMERA SETUP
PROG. AE OFF ▶
PROGRESSIVE ▶OFF
SIS ▶OFF
D. ZOOM ▶OFF
CINEMA ▶OFF
SHTR EFFECT ▶OFF
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Recording In Special Situations

(Programme AE)

This function lets you select Automatic Exposure settings optimized for special recording situations.

1 **Set the Mode Selector Switch to [MNL].**
The [MNL] Indication appears.

2 **Press the [MENU] Button.**
The [CAMERA FUNCTIONS] Main-Menu appears.

3 **Turn the [PUSH] Dial to select [CAMERA SETUP] and then press the [PUSH] Dial.**
The [CAMERA SETUP] Sub-Menu appears.

4 **Turn the [PUSH] Dial to select [PROG.AE].**

5 **Press the [PUSH] Dial to select the desired mode ([ ], [ ], [ ], [ ] or [ ]).**

6 **Press the [MENU] Button to exit the menu.**
The indication of the selected mode appears.

[ ] **Sports Mode ❶**
To record scenes with fast-moving subjects such as sports scenes.

[ ] **Portrait Mode ❷**
To make subjects stand out sharply from the background.

[ ] **Low Light Mode ❸**
To record dark scenes more brightly.

[ ] **Spotlight Mode ❹**
To record subjects under bright spotlights such as at a party, in the theatre, etc.

[ ] **Surf & Snow Mode ❺**
To record subjects in brightly lit surroundings such as on a ski slope, beach, etc.

Cancelling the Programme AE Function
Set [PROG.AE] on the [CAMERA SETUP] Sub-Menu to [OFF].
Or set the Mode Selector Switch to [AUTO].

It is not possible to adjust the shutter speed **(➜ 53)** or the iris value **(➜ 54)** when one of the Programme AE Modes is selected.

Sports Mode

- When playing back scenes recorded in the Sports Mode, you can enjoy slow motion and still playback of very sharp images with fine details.
- During normal playback, movements in the picture may not be smooth.
- Avoid recording under fluorescent, mercury-vapour or natrium lamps in this mode, as the colour and the brightness of the playback picture might fluctuate.
- When recording subjects lit by strong lights or with much light reflection, the playback picture may contain vertical streaks of light.
- When the scene is not sufficiently lit, the [ ] Indication flashes.
- When using this mode for recording indoors, the playback picture may flicker.
- It is not possible to use the Sports Mode [ ] together with the Gain-up Mode [GAINUP].
- When recording still pictures in the Progressive Photoshot Mode while the Sports Mode is activated, the brightness of the recorded still pictures may be unstable.

Portrait Mode

- When using this mode for recording indoors, the playback picture may flicker.
- It is not possible to use the Portrait Mode [ ] together with the Gain-up Mode [GAINUP].
- When recording still pictures in the Progressive Photoshot Mode while the Portrait Mode is activated, the brightness of the recorded still pictures may be unstable.

Low Light Mode

- It may not be possible to sufficiently brighten up extremely dark scenes.

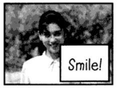
Spotlight Mode

- When using this mode, the recorded picture may be extremely dark.
- If a subject is extremely bright, the recorded picture may be whitish.

Surf & Snow Mode

- If a subject is extremely bright, the recorded picture may be whitish.

❶

❷


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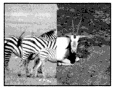

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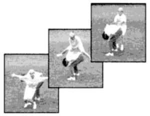

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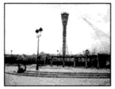

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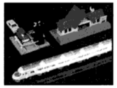

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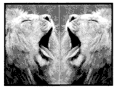


Recording with Special Effects

(Digital Effects)

There are 13 different modes available for adding special digital picture effects.

Digital Effects 1 [EFFECT1]

❶ Multi-Picture Mode [MULTI]
The screen is divided into 9 small still fields. For details, **(➜ 44, 45)**.

❷ Picture-in-Picture Mode [P-IN-P]
A small still picture is inserted and displayed inside the normal picture. For details, **(➜ 47)**.

❸ Wipe Mode [WIPE]
It gradually replaces a picture of the last previously recorded scene with the picture of the new scene, like drawing a curtain. For details, **(➜ 48)**.

❹ Mix Mode [MIX]
It gradually fades out the picture of the last previously recorded scene while fading in the picture of the new scene. For details, **(➜ 49)**.

❺ Strobe Mode [STROBE]
It records the pictures with a stroboscope-like effect.

❻ Gain-up Mode [GAINUP]
It electronically brightens up the picture.
In this mode, adjust the focus manually.

❼ Trailing Effect Mode [TRACER]
The picture is recorded with a trailing effect.

❽ Mosaic Mode [MOSAIC]
The picture becomes mosaic-like.

❾ Mirror Mode [MIRROR]
The right half of the picture is a mirror image of the left half.

⑩

⑪

⑫

⑬

Recording with Special Effects

(Digital Effects) (Continued)

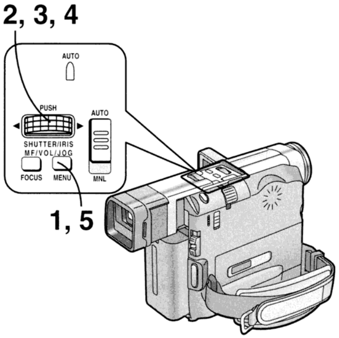
Digital Effects 2 [EFFECT2]

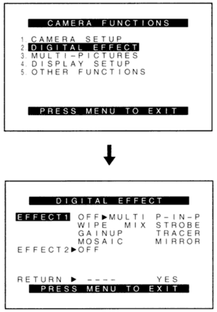
⑩ **Negative Mode [NEGA]**
The recorded pictures have reversed colours similar to photographic negatives.

⑪ **Sepia Mode [SEPIA]**
Scenes are recorded with a brown tint similar to the colour of old photographs.

⑫ **Black & White Mode [B/W]**
The picture is recorded in black and white.

⑬ **Solarisation Mode [SOLARI]**
The picture is recorded with an effect similar to a painting.





```
CAMERA FUNCTIONS
1. CAMERA SETUP
2. DIGITAL EFFECT
3. MULTI-PICTURES
4. DISPLAY SETUP
5. OTHER FUNCTIONS

PRESS MENU TO EXIT
```

```
DIGITAL EFFECT
EFFECT1  OFF ▶MULTI   P-IN-P
         WIPE   MIX   STROBE
         GAINUP       TRACER
         MOSAIC       MIRROR
EFFECT2 ▶OFF

RETURN ▶ ----          YES
PRESS MENU TO EXIT
```

Recording with Special Effects

(Digital Effects) (Continued)

Selecting the Desired Digital Effect

1 Press the [MENU] Button.
The [CAMERA FUNCTIONS] Main-Menu appears.

2 Turn the [PUSH] Dial to select [DIGITAL EFFECT] and then press the [PUSH] Dial.
The [DIGITAL EFFECT] Sub-Menu appears.

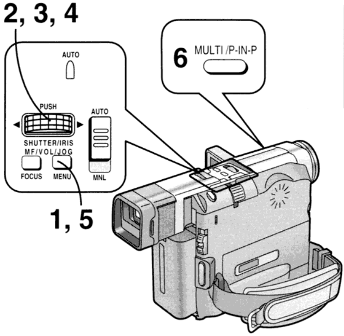
3 Turn the [PUSH] Dial to select [EFFECT1] or [EFFECT2].

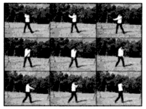
4 Press the [PUSH] Dial to select the desired digital effect.

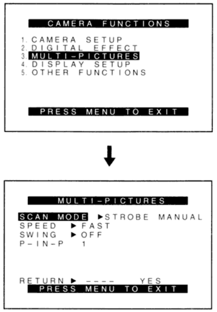
5 Press the [MENU] Button to exit the menu.
- The picture now has the selected digital effect. However, the Multi-Picture Function, Picture-in-Picture Function, Wipe Function and Mix Function require additional operations to make their effect visible. **(➜ 44, 45, 47, 48, 49)**

- If you have set [EFFECT1] on the [DIGITAL EFFECT] Sub-Menu to [GAINUP], you need to adjust the focus manually; however, adjusting the shutter speed and selecting a white balance mode are not possible.
- If you have set [EFFECT2] on the [DIGITAL EFFECT] Sub-Menu to [B/W] or [SEPIA], changing the selected white balance mode is not possible.
- It is not possible to select the Sports Mode [🏃] or the Portrait Mode [👤] together with the Gain-up Mode [GAINUP] on the [DIGITAL EFFECT] Sub-Menu.
- When [PROGRESSIVE] on the [CAMERA SETUP] Sub-Menu is set to [ON], it is not possible to use any of the digital modes in [EFFECT1] on the [DIGITAL EFFECT] Sub-Menu. **(➜ 24)**

Cancelling the Digital Effect
Set [EFFECT1] or [EFFECT2] on the [DIGITAL EFFECT] Sub-Menu to [OFF].







```
CAMERA FUNCTIONS
1. CAMERA SETUP
2. DIGITAL EFFECT
3. MULTI-PICTURES
4. DISPLAY SETUP
5. OTHER FUNCTIONS

PRESS MENU TO EXIT
```

```
MULTI-PICTURES
SCAN MODE ▶STROBE  MANUAL
SPEED     ▶FAST
SWING     ▶OFF
P-IN-P     1

RETURN ▶ ----      YES
PRESS MENU TO EXIT
```

Recording with Special Effects

(Digital Effects) (Continued)

■ Strobe Multi-Picture Mode

This function captures and displays a sequence of 9 small still pictures.

After setting [EFFECT1] on the [DIGITAL EFFECT] Sub-Menu to [MULTI]... (➜ 43)

1 Press the [MENU] Button.

2 Turn the [PUSH] Dial to select [MULTI-PICTURES] and then press the [PUSH] Dial.
The [MULTI-PICTURES] Sub-Menu appears.

3 Turn the [PUSH] Dial to select [SCAN MODE] and then press the [PUSH] Dial to select [STROBE].

4 Turn the [PUSH] Dial to select [SPEED] and then press the [PUSH] Dial to select the desired strobe speed.
At the [FAST] setting, the sequence of 9 still pictures is captured within approximately 1 second, at [NORMAL] within approximately 2 seconds, and at [SLOW] within approximately 3 seconds.

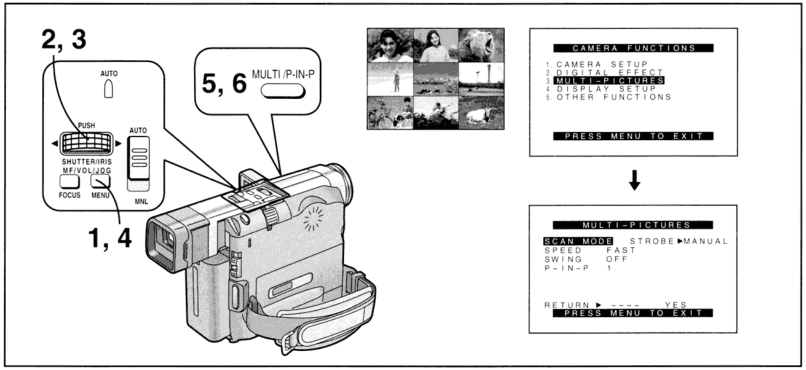
5 Press the [MENU] Button to exit the menu.

6 Press the [MULTI] Button.
A sequence of 9 still pictures appears.

Swing Mode
If you set [SWING] on the [MULTI-PICTURES] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu to [ON], the intervals at which the 9 still pictures are taken are longer at the beginning and end than in the middle of the swing strobe period.

Making the Multi-Pictures Disappear
Press the [MULTI] Button.

Displaying the Multi-Pictures Again
Press the [MULTI] Button for more than 1 second.



CAMERA FUNCTIONS
1. CAMERA SETUP
2. DIGITAL EFFECT
3. MULTI-PICTURES
4. DISPLAY SETUP
5. OTHER FUNCTIONS
PRESS MENU TO EXIT

MULTI-PICTURES
SCAN MODE STROBE ▶MANUAL
SPEED FAST
SWING OFF
P-IN-P 1
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Recording with Special Effects

(Digital Effects) (Continued)

■ Manual Multi-Picture Mode

With this function, you can capture up to 9 small still pictures and display them together on the same screen.

After setting [EFFECT1] on the [DIGITAL EFFECT] Sub-Menu to [MULTI]... (➜ 43)

1 Press the [MENU] Button.

2 Turn the [PUSH] Dial to select [MULTI-PICTURES] and then press the [PUSH] Dial.
The [MULTI-PICTURES] Sub-Menu appears.

3 Turn the [PUSH] Dial to select [SCAN MODE] and then press the [PUSH] Dial to select [MANUAL].

4 Press the [MENU] Button to exit the menu.

5 Press the [MULTI] Button once to activate the Multi-Picture Mode.

6 Point the Movie Camera at the desired scene and press the [MULTI] Button again for each of the up to 9 still pictures that you want to capture.

Making All Multi-Pictures Disappear

After displaying 9 pictures, it is possible to make them disappear in one go by pressing the [MULTI] Button.

Displaying the Multi-Pictures Again

Press the [MULTI] Button for more than 1 second.

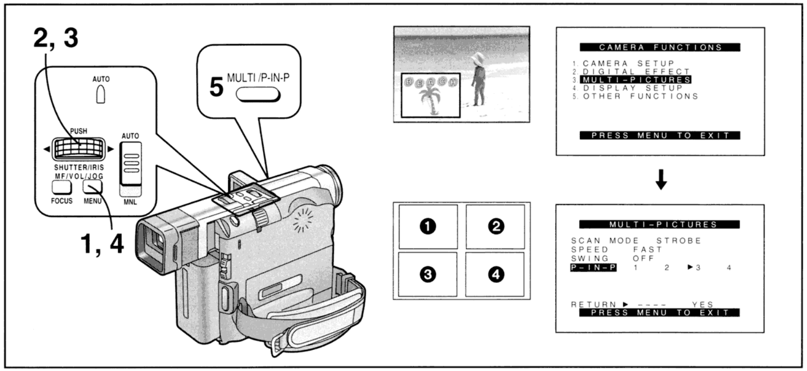
Erasing the Multi-Pictures One by One

While still pictures are displayed, press the [MULTI] Button for more than 1 second.

- This erases the last captured picture. Keeping the [MULTI] Button pressed, erases the pictures continuously.
- After you have erased the still pictures one by one, it is not possible to display them again.

Notes for Using the Multi-Picture Mode

- It is not possible to use the Multi-Picture Mode when [PROGRESSIVE] on the [CAMERA SETUP] Sub-Menu is set to [ON].
- When using the Mirror Mode with the LCD Monitor facing forward, pressing the [MULTI] Button displays the still pictures starting at the top right corner of the screen.
- The quality of the pictures recorded in the Multi-Picture Mode is slightly inferior.
- To record the displayed Multi Mode still pictures onto the tape, press the Recording Start/Stop Button or the [PHOTO SHOT] Button.



CAMERA FUNCTIONS
1. CAMERA SETUP
2. DIGITAL EFFECT
3. MULTI-PICTURES
4. DISPLAY SETUP
5. OTHER FUNCTIONS
PRESS MENU TO EXIT

MULTI-PICTURES
SCAN MODE STROBE
SPEED FAST
SWING OFF
P-IN-P 1 2 ▶3 4
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Recording with Special Effects

(Digital Effects) (Continued)

■ Picture-in-Picture Mode

This function lets you display a small still picture inside the normal picture.

After setting [EFFECT1] on the [DIGITAL EFFECT] Sub-Menu to [P-IN-P]... (➜ 43)

1 Press the [MENU] Button.

2 Turn the [PUSH] Dial to select [MULTI-PICTURES] and then press the [PUSH] Dial.
The [MULTI-PICTURES] Sub-Menu appears.

3 Turn the [PUSH] Dial to select [P-IN-P] and then press the [PUSH] Dial to select the desired position (❶, ❷, ❸ or ❹) where you want to insert the small picture.

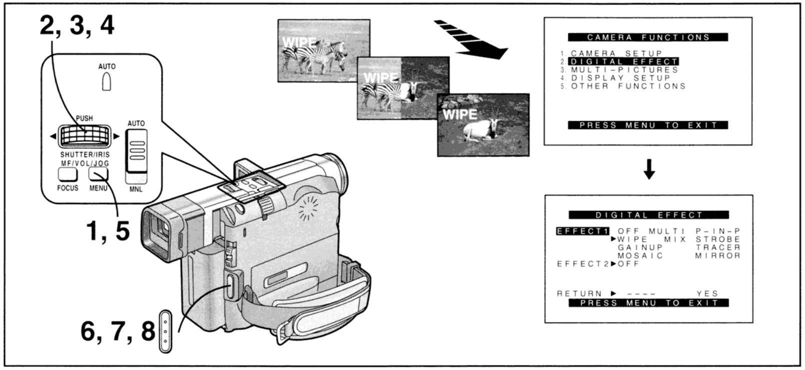
4 Press the [MENU] Button to exit the menu.

5 Aim the Movie Camera at the scene that you want to capture and insert as a small picture and press the [P-IN-P] Button.
The small still picture appears inside the normal picture.

Making the Small Picture Dissapear

Press the [P-IN-P] Button.

- It is not possible to use the Picture-in-Picture Mode when [PROGRESSIVE] on the [CAMERA SETUP] Sub-Menu is set to [ON].
- When you use the Camera Search Function or Recording Check Function, the small picture disappears. (However, it appears again after the Camera Search or Recording Check has finished.)
- It is possible to record the picture with the small picture inside in the Photoshot Mode. (However, it cannot be recorded in the Progressive Photoshot Mode.)
- Turning the Movie Camera off erases the small picture being displayed inside the normal picture.
- To record in the Picture-in-Picture Mode, press the Recording Start/Stop Button or the [PHOTO SHOT] Button.


2, 3, 4
AUTO
PUSH
AUTO
SHUTTER/IRIS
MF/VOL/JOG
FOCUS
MENU
MNL
1, 5
6, 7, 8
WIPE
WIPE
WIPE
CAMERA FUNCTIONS
1. CAMERA SETUP
2. DIGITAL EFFECT
3. MULTI-PICTURES
4. DISPLAY SETUP
5. OTHER FUNCTIONS
PRESS MENU TO EXIT
DIGITAL EFFECT
EFFECT1 OFF MULTI P-IN-P
▶WIPE MIX STROBE
GAINUP TRACER
MOSAIC MIRROR
EFFECT2▶OFF
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Recording with Special Effects

(Digital Effects) (Continued)

■ Wipe Mode

It gradually replaces a still picture of the last recorded scene with the moving picture of the new scene, like drawing a curtain.

1 **Press the [MENU] Button.**

2 **Turn the [PUSH] Dial to select [DIGITAL EFFECT] and then press the [PUSH] Dial.**
The [DIGITAL EFFECT] Sub-Menu appears.

3 **Turn the [PUSH] Dial to select [EFFECT1].**

4 **Press the [PUSH] Dial to select [WIPE].**

5 **Press the [MENU] Button to exit the menu.**
The [WIPE] Indication appears.

6 **Press the Recording Start/Stop Button to start recording.**
The normal recording starts.

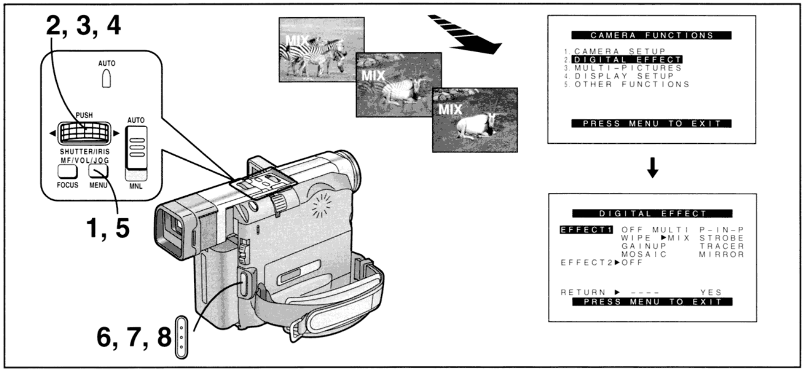
7 **Press the Recording Start/Stop Button to pause recording.**
The last picture is stored in memory.
The [WIPE] Indication changes to [WIPE].

8 **Press the Recording Start/Stop Button to start recording again.**
The last picture of the previous scene is gradually replaced by the new scene.

If you perform any of the following operations after performing Step 7, the picture stored in memory is erased and the Wipe Function cannot be used:

- Selecting any other mode on the [DIGITAL EFFECT] Sub-Menu.
- Using the Camera Search Function.

- Instead of performing the Wipe from the last recorded picture, you can store a still picture in memory by pressing the [PHOTO SHOT] Button after Step 5 above and then perform Step 8.


2, 3, 4
AUTO
PUSH
AUTO
SHUTTER/IRIS
MF/VOL/JOG
FOCUS
MENU
MNL
1, 5
6, 7, 8
MIX
MIX
MIX
CAMERA FUNCTIONS
1. CAMERA SETUP
2. DIGITAL EFFECT
3. MULTI-PICTURES
4. DISPLAY SETUP
5. OTHER FUNCTIONS
PRESS MENU TO EXIT
DIGITAL EFFECT
EFFECT1 OFF MULTI P-IN-P
WIPE ▶MIX STROBE
GAINUP TRACER
MOSAIC MIRROR
EFFECT2▶OFF
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Recording with Special Effects

(Digital Effects) (Continued)

■ Mix Mode

It gradually fades out a still picture of the last recorded scene while fading in the moving picture of the new scene.

1 **Press the [MENU] Button.**

2 **Turn the [PUSH] Dial to select [DIGITAL EFFECT] and then press the [PUSH] Dial.**
The [DIGITAL EFFECT] Sub-Menu appears.

3 **Turn the [PUSH] Dial to select [EFFECT1].**

4 **Press the [PUSH] Dial to select [MIX].**

5 **Press the [MENU] Button to exit the menu.**
The [MIX] Indication appears.

6 **Press the Recording Start/Stop Button to start recording.**
The normal recording starts.

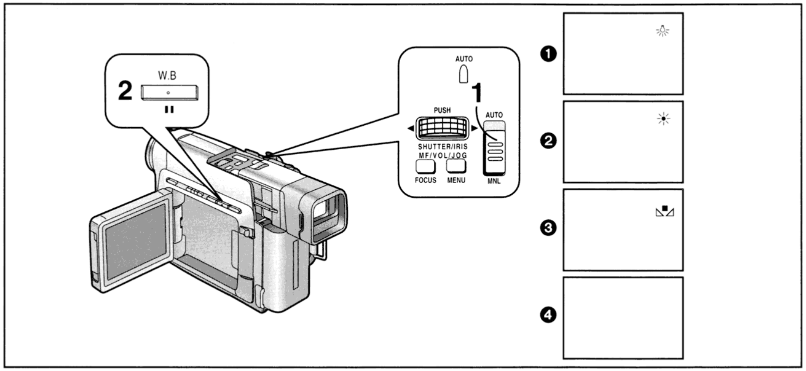
7 **Press the Recording Start/Stop Button to pause recording.**
The last picture is stored in memory.
The [MIX] Indication changes to [MIX].

8 **Press the Recording Start/Stop Button to start recording again.**
The last picture gradually fades out while the new scene fades in.

If you perform any of the following operations after performing Step 7, the picture stored in memory is erased and the Mix Function cannot be used:

- Selecting any other mode on the [DIGITAL EFFECT] Sub-Menu.
- Using the Camera Search Function.

- Instead of performing the Mix from the last recorded picture, you can store a still picture in memory by pressing the [PHOTO SHOT] Button after Step 5 above and then perform Step 8.


2
W.B
AUTO
1
PUSH
AUTO
SHUTTER/IRIS
MF/VOL/JOG
FOCUS
MENU
MNL
❶
❷
❸
❹

Recording with Natural Colours

(White Balance)

This Movie Camera automatically adjusts the white balance to ensure that the pictures are recorded with natural colours. For certain types of subjects and lighting conditions, however, this Auto White Balance Adjustment Mode may not be able to ensure natural colours **(➔ 101, 102)**. In these cases, you can select either one of the 3 preset modes explained below (indoor, outdoor, or the last manually adjusted white balance setting), or you can manually adjust the white balance **(➔ 51)**.

1 **Set the Mode Selector Switch to [MNL].**
The [MNL] Indication appears.

2 **Press the White Balance [W.B] Button.**
Repeatedly press the [W.B] Button to select the desired White Balance Mode.

The modes change in the following order:

❶ Indoor Mode
(recording under incandescent lamp) (✺)

❷ Outdoor Mode (☀)

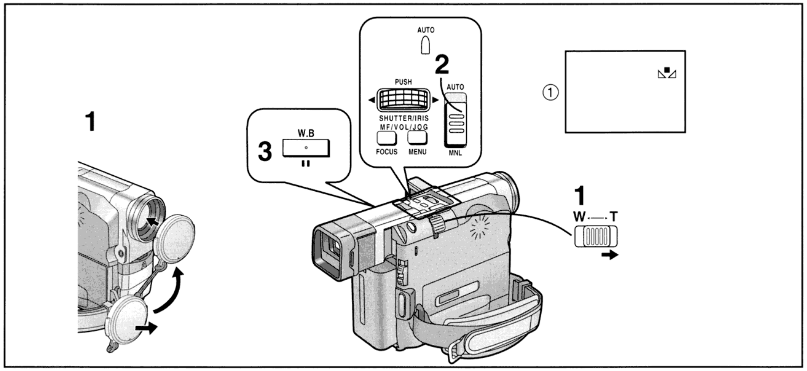
❸ Last manually adjusted White Balance setting (▲) **(➔ 51)**

❹ Automatic White Balance Adjustment (no indication)

- Be sure to remove the Lens Cap before setting the [OFF/ON/MODE] Switch to [ON]. If the Lens Cap is still attached to the Lens when the [CAMERA] Lamp lights, the automatic White Balance adjustment may not be precise.
- If you have set [EFFECT1] on the [DIGITAL EFFECT] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu to [GAINUP], or if you have set [EFFECT2] to [SEPIA] or [B/W], it is not possible to change the White Balance.
- To change the White Balance mode, the Movie Camera must be set within the optical zoom range (1×–15×). If you try to change it in the digital zoom range, the [▲] Indication flashes.

Returning to the Auto White Balance Adjustment Mode

Press the [W.B] Button repeatedly until none of the White Balance Mode Indications ([✺], [☀], [▲]) are displayed any more. Or, set the Mode Selector Switch to [AUTO].



Adjusting the White Balance Manually

Use the Manual White Balance Adjustment Mode for all types of lighting outside the range ❶ **(➜ 102)**, as the Auto White Balance Adjustment Mode can only ensure natural colours for the types of lighting within that range. For optimum results under almost any type of lighting, we recommend that you adjust the white balance manually for each new scene.

1 Attach the Lens Cap and zoom in until the entire screen becomes white.

2 Set the Mode Selector Switch to [MNL].
The [MNL] Indication appears.

3 Keep the [W.B] Button pressed until the [▪] Indication ① stops flashing and remains lit.

In the Following Cases, the [▪] Indication Flashes:

When you recall the last manually adjusted White Balance setting

- The flashing indication tells you that the white balance setting you last adjusted is still maintained. This setting is kept until you adjust the White Balance again.

When you are trying to adjust the White Balance in a dark place

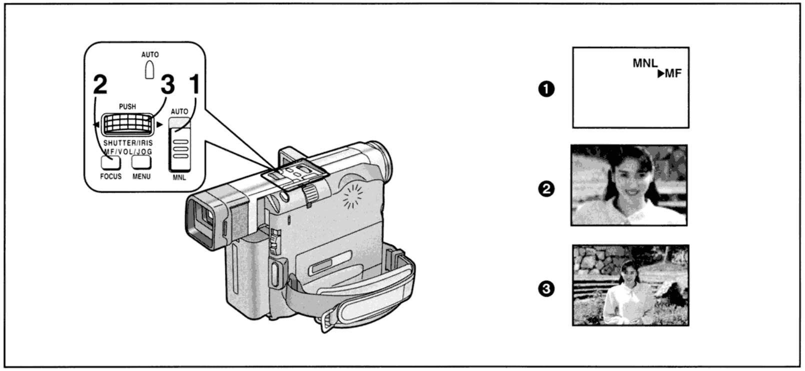
- Under weak illumination, precise manual White Balance adjustment may not be possible. In this case, set the Mode Selector Switch to [AUTO] to record with automatic White Balance adjustment.

During manual adjustment of the White Balance

- The [▪] Indication flashes while the White Balance is being adjusted. When the white balance adjustment is finished, the [▪] Indication stops flashing and remains lit.

- It is not possible to manually adjust the White Balance or select any of the preset white balance modes when you have zoomed to 15× or higher (digital zoom range), when [EFFECT1] on the [DIGITAL EFFECT] Sub-Menu is set to [GAINUP] and when [EFFECT2] is set to [SEPIA] or [B/W].
- We recommend that you adjust the white balance anew whenever there is a change in the recording situation.

Returning to the Automatic White Balance Adjustment Mode
Press the [W.B] Button repeatedly until none of the White Balance Mode Indications ([☼], [☀], [▪]) are displayed any more. Or, set the Mode Selector Switch to [AUTO].



Focusing on the Subject Manually

(Manual Focus)

This makes it possible to adjust the focus manually for subjects and recording situations for which automatic focusing is not precise.

1 Set the Mode Selector to [MNL].
The [MNL] Indication appers.

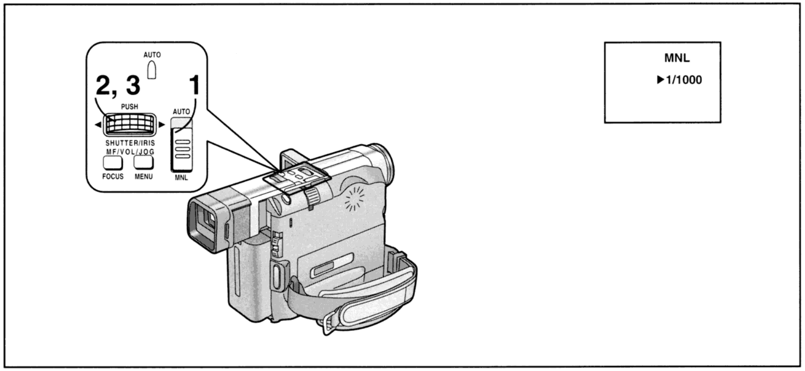
2 Press the [FOCUS] Button.
The [▶MF] Indication ❶ appears.
MF: Manual Focus Mode

3 Turn the [PUSH] Dial until the subject is sharp.

Returning to the Automatic Focusing Mode
Press the [FOCUS] Button to make the [▶MF] Indication disappear. Or, set the Mode Selector Switch to [AUTO].

Hint for Manual Focus Adjustment

- If you adjust the focus in the wide-angle setting, the subject may go out of focus when you enlarge it. Therefore, enlarge the subject ❷ before you adjust the focus, so that the picture remains focused when you zoom out ❸.
- If you want to adjust the focus manually after having adjusted the shutter speed **(➜ 53)** or the iris **(➜ 54)**, be sure to press the [FOCUS] Button to make the [▶MF] Indication appear, even if the [MF] Indication is displayed.



Adjusting the Shutter Speed Manually

To achieve special creative effects or to cope with special lighting situations or fast-action scenes, you can adjust the shutter speed manually.

1 Set the Mode Selector Switch to [MNL].
The [MNL] Indication appears.

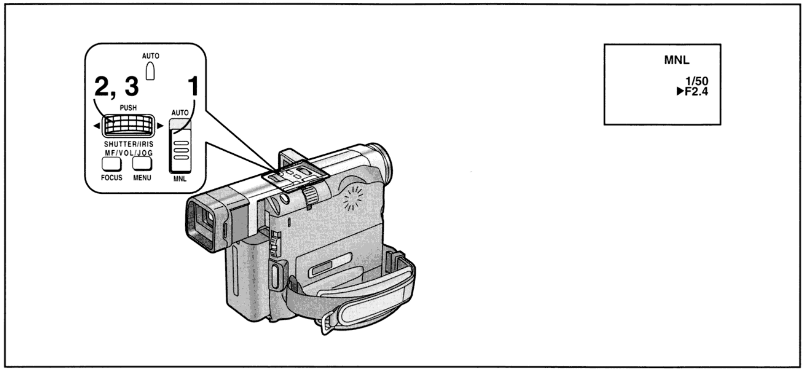
2 Press the [PUSH] Dial.
The Shutter Speed Indication appears.
You can change between the Shutter Speed Indication and the Iris (F Number) **(➜ 54)** Indication by repeatedly pressing the [PUSH] Dial.

3 Turn the [PUSH] Dial to adjust the shutter speed.

Range of Shutter Speed Adjustment
1/50–1/8000 s
The standard shutter speed is 1/50 s.
The nearer to [1/8000] a setting you select, the faster the shutter speed becomes.

- When [PROGRESSIVE] on the [CAMERA SETUP] Sub-Menu is set to [ON], the range of selectable shutter speeds is limited from 1/50 s to 1/500 s.
- The playback picture of subjects lit by strong lights or with much light reflection may contain vertical streaks of light.
- During normal playback, the scene-to-scene transitions may not be smooth.
- Avoid recording under fluorescent lamps, mercury lamps or natrium lamps, as they can cause unstable colours and brightness of the playback picture.
- When [PROGRESSIVE] on the [CAMERA SETUP] Sub-Menu is set to [AUTO], and the shutter speed is set to 1/750 s or faster, the Progressive Photoshot Mode cannot be used.
- When using the Gain-up Mode **(➜ 41)** or any of the Programme AE Modes **(➜ 39)**, it is not possible to adjust the shutter speed. If the shutter speed was manually adjusted, this setting is cancelled.
- Adjust the shutter speed according to the recording situation.

Returning to the Normal Shutter Speed
Set the Mode Selector Switch to [AUTO].



Adjusting the Iris (F Number) Manually

To achieve special creative effects or to cope with special lighting situations, you can adjust the iris (F number) manually.

1 Set the Mode Selector Switch to [MNL].
The [MNL] Indication appears.

2 Press the [PUSH] Dial twice.
The [▶F] Indication appears.
You can change between the Iris (F Number) Indication and the Shutter Speed Indication by repeatedly pressing the [PUSH] Dial.

3 Turn the [PUSH] Dial to adjust the iris.

Range of Iris Adjustment

CLOSE (Closed) → F16...F2.0 → OP (Opened)
+0dB...OP+18dB

The nearer to [CLOSE] a value you select, the darker the picture becomes.

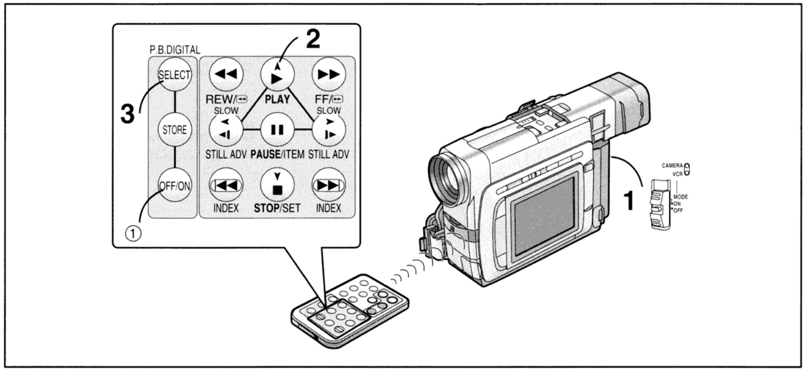
The nearer to [OP+18dB] a value you select, the brighter the picture becomes.

The figures with +dB show the Gain-up value. If you increase the value too much, the picture quality deteriorates.

Returning to the Normal Iris Value (F Number)

Press the [PUSH] Dial one time to make the [▶F] Indication disappear. Or set the Mode Selector Switch to [AUTO].

- ●Increasing the Gain-up value also increases the graininess of the picture.
- ●Depending on the zoom magnification, some iris values may not be displayed.
- ●Manually adjusting the shutter speed after performing manual iris adjustment changes the iris back to automatic adjustment. Therefore, if you want to adjust both the shutter speed and iris manually, be sure to adjust the shutter speed first. **(→ 53)**
- ●Manual iris adjustment is not possible when [PROG.AE] on the [CAMERA SETUP] Sub-Menu is set to any setting other than [OFF]. **(→ 39)**



Playing Back with Special Effects

(Playback Digital Effects)

There are 11 different modes available for adding special digital picture effects to your recordings during playback. They are identical to the Digital Effects 1 and 2 **(→ 41, 42)** that can be used during recording.

❶MULTI ❷WIPE ❸MIX ❹STROBE
❺NEGA ❻SEPIA ❼B/W ❽TRACER
❾SOLARI ❿MOSAIC ⓫MIRROR

1 Slide the [OFF/ON/MODE] Switch from the [ON] position to put the Movie Camera in the VCR Mode.

2 Press the Play Button [▶].

3 Press the [SELECT] Button on the Remote Controller to select the desired digital effect.
Repeatedly pressing the [SELECT] Button changes the selected digital effect in the order ❶ to ⓫.
Selecting a digital effect is also possible by setting [EFFECT SELECT] on the [DIGITAL EFFECT] Sub-Menu of the [VCR FUNCTIONS] Main-Menu to the desired effect.

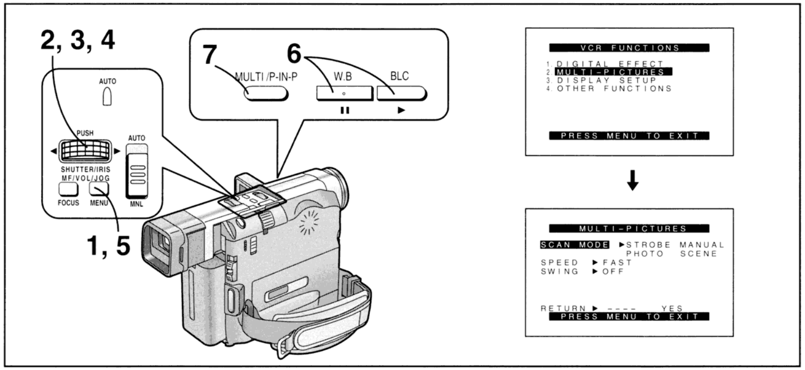
Suspending the Playback Digital Effect Temporarily

You can suspend and re-activate the digital effect by repeatedly pressing the [OFF/ON] Button ①. Suspending a digital effect is also possible by setting [EFFECT] on the [DIGITAL EFFECT] Sub-Menu to [OFF], and later to [ON] to re-activate it. When the digital effect is temporarily suspended, the indication of the selected effect flashes.

Cancelling the Digital Effect

Press the [SELECT] Button on the Remote Controller to make the displayed digital effect indication disappear. Or, set [EFFECT SELECT] on the [DIGITAL EFFECT] Sub-Menu to [OFF].

- ●The signal of the picture with a digital effect added during playback cannot be output from the DV Terminal **(→ 8)** or the Digital Still Picture Terminal **(→ 78)**.
- ●In the VCR Mode, the Wipe and the Mix Function can only be operated with the Remote Controller.
- ●It is not possible to use the Wipe or Mix Function during playback of an unrecorded part of the tape.
- ●It is not possible to use the Mirror Mode of the Digital Effects and the Playback Zoom Function at the same time. **(→ 62)**



Playing Back with Special Effects

(Playback Digital Effects) (Continued)

■ Strobe Multi-Picture Mode

This function captures and displays a sequence of 9 small still pictures from the playback picture. This is very convenient for motion analysis of sports action, animal studies, etc.

After setting [EFFECT SELECT] on the [DIGITAL EFFECT] Sub-Menu to [MULTI]... (→ 55)

1 Press the [MENU] Button.

2 Turn the [PUSH] Dial to select [MULTI-PICTURES] and then press the [PUSH] Dial.
The [MULTI-PICTURES] Sub-Menu appears.

3 Turn the [PUSH] Dial to select [SCAN MODE] and then press the [PUSH] Dial to select [STROBE].

4 Turn the [PUSH] Dial to select [SPEED] and then press the [PUSH] Dial to select the desired strobe speed.
At the [FAST] setting, the sequence of 9 still pictures is captured within approximately 1 second, at [NORMAL] within approximately 2 seconds, and at [SLOW] within approximately 3 seconds.

5 Press the [MENU] Button to exit the menu.

6 Start playback, and when you reach the scene that you want to capture and display in the Strobe Multi-Picture Mode, pause the picture.

7 Press the [MULTI] Button.
A sequence of 9 still pictures appears and the tape stops.

Swing Mode

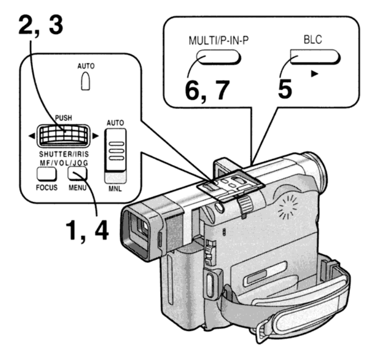
If you set [SWING] on the [MULTI-PICTURES] Sub-Menu to [ON], the intervals at which the still pictures are captured are longer at the beginning and end than in the middle of the swing strobe period.

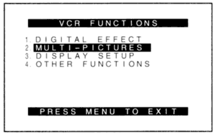
Making the Multi-Pictures Disappear

Press the [MULTI] Button.

Displaying the Multi-Pictures Again

Press the [MULTI] Button for more than 1 second.





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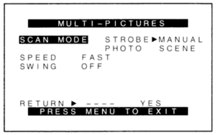
VCR FUNCTIONS
1 DIGITAL EFFECT
2 MULTI-PICTURES
3 DISPLAY SETUP
4 OTHER FUNCTIONS

PRESS MENU TO EXIT
```



```
MULTI-PICTURES
SCAN MODE  STROBE▶MANUAL
           PHOTO   SCENE
SPEED      FAST
SWING      OFF

RETURN ▶ ----      YES
PRESS MENU TO EXIT
```

Playing Back with Special Effects

(Playback Digital Effects) (Continued)

■ Manual Multi-Picture Mode

With this function, you can capture up to 9 pictures from different scenes and display them together as small still pictures on the same screen. This lets you put together an assortment of different scenes in a single picture.

After setting [EFFECT SELECT] on the [DIGITAL EFFECT] Sub-Menu to [MULTI]... (➜ 55)

1 **Press the [MENU] Button.**

2 **Turn the [PUSH] Dial to select [MULTI-PICTURES] and then press the [PUSH] Dial.**
The [MULTI-PICTURES] Sub-Menu appears.

3 **Turn the [PUSH] Dial to select [SCAN MODE] and then press the [PUSH] Dial to select [MANUAL].**

4 **Press the [MENU] Button to exit the menu.**

5 **Press the [▶] Button.**

6 **Press the [MULTI] Button once to activate the Multi-Picture Mode.**

7 **Press the [MULTI] Button at the scene that you want to capture and display in the Manual Multi-Picture Mode.**
When 9 still pictures are displayed, the tape stops.

Making All Multi-Pictures Disappear
After displaying 9 pictures, it is possible to make them disappear in one go by pressing the [MULTI] Button.

Displaying the Multi-Pictures Again
Press the [MULTI] Button for more than 1 second.

Erasing the Multi-Pictures One by One
While still pictures are displayed, press the [MULTI] Button for more than 1 second.

- ●This erases the last captured picture. Keeping the [MULTI] Button pressed erases the pictures continuously.
- ●After you have erased the still pictures one by one, it is not possible to display them again.

Playing Back with Special Effects

(Playback Digital Effects) (Continued)

■ Index Multi-Picture Mode

With this function, you can automatically capture up to 9 small still pictures of scenes or Photoshot pictures marked with index signal and display them in a single picture.

After setting [EFFECT SELECT] on the [DIGITAL EFFECT] Sub-Menu to [MULTI]... (➜ 55)

1 **Press the [MENU] Button.**

2 **Turn the [PUSH] Dial to select [MULTI-PICTURES] and then press the [PUSH] Dial.**
The [MULTI-PICTURES] Sub-Menu appears.

3 **Turn the [PUSH] Dial to select [SCAN MODE] and then press the [PUSH] Dial to select [PHOTO] or [SCENE].**

4 **Press the [MENU] Button to exit the menu.**

5 **Press the [MULTI] Button.**
9 pictures marked with index signals are captured in forward direction from the tape position at which the [MULTI] Button was pressed, and the tape then stops. (If there are less than 9 pictures marked with index signals, the tape stops at its end.)

Making the Multi-Pictures Disappear
Press the [MULTI] Button.

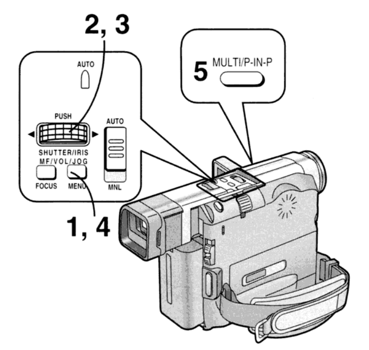
Displaying the Multi-Pictures Again
Press the [MULTI] Button for more than 1 second.

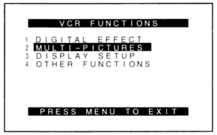
There Are Two Different Types of Index Signals:
In Step 3 above, select [PHOTO] or [SCENE] as follows:

[PHOTO]: To search for still pictures marked with photoshot index signal and capture and display them.

[SCENE]: To search for scenes marked with scene index signal and capture and display them as still pictures.

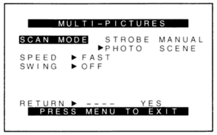
- ●The index signals are recorded automatically during recording. **(➜ 35)**





```
VCR FUNCTIONS
1 DIGITAL EFFECT
2 MULTI-PICTURES
3 DISPLAY SETUP
4 OTHER FUNCTIONS

PRESS MENU TO EXIT
```

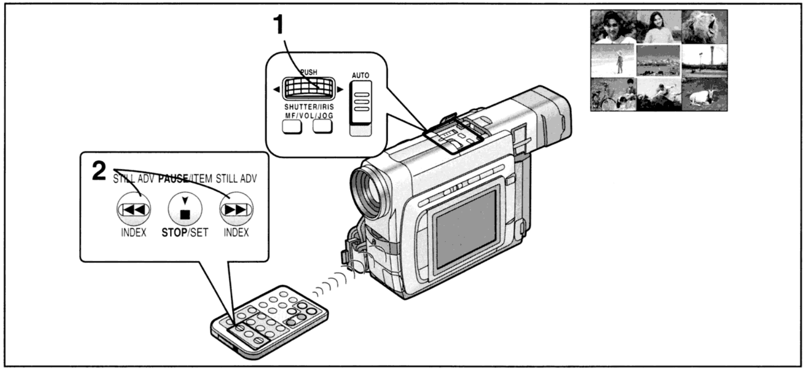


```
MULTI-PICTURES
SCAN MODE  STROBE  MANUAL
          ▶PHOTO   SCENE
SPEED     ▶FAST
SWING     ▶OFF

RETURN ▶ ----      YES
PRESS MENU TO EXIT
```

Notes for Using the Multi-Picture Mode

- ●The playback multi-pictures cannot be output from the DV Terminal **(➜ 8)** or the Digital Still Picture Terminal **(➜ 78)**.
- ●The quality of the pictures displayed in the Multi-Picture Mode is slightly inferior.
- ●If you switch the Movie Camera from the Index Multi-Picture Mode over to the Camera Mode, the setting of [SCAN MODE] on the [MULTI-PICTURES] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu is automatically set to [STROBE].


1
PUSH
AUTO
SHUTTER/IRIS
MF/VOL/JOG
2
STILL ADV PAUSE/ITEM STILL ADV
INDEX STOP/SET INDEX

Playing Back with Special Effects

(Playback Digital Effects) (Continued)

■ Multi-Picture Search

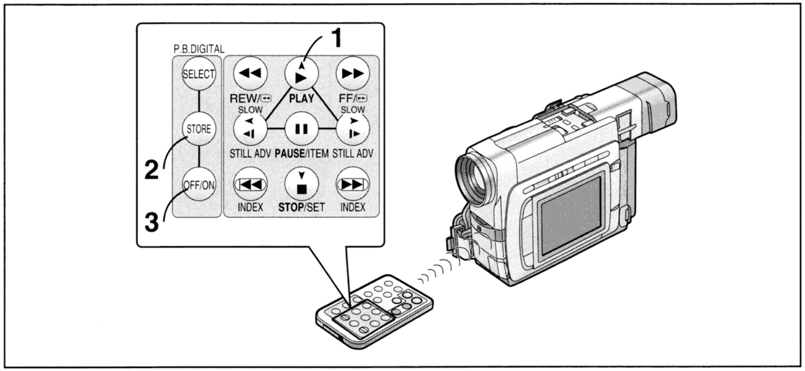
This function lets you search for the tape position of a desired still picture displayed in the Multi-Picture Mode.

1. **After displaying the still pictures in the Multi-Picture Mode, turn the [PUSH] Dial to select a picture whose tape position you want to locate.**
   The selected picture is marked with a flashing red frame.
2. **Press the Index Button [|◀◀] or [▶▶|] on the Remote Controller.**
   The tape stops at the beginning of the selected scene and the Movie Camera is in the Still Playback Mode.

Displaying the Still Pictures in the Multi-Picture Mode Again

Press the [MULTI] Button for more than 1 second.

- In case of the pictures displayed in the Manual Multi-Picture Mode **(➜ 57)**, use the Multi-Picture Search Function after displaying all 9 pictures.
- In case of the pictures displayed in the Index Multi-Picture Mode **(➜ 58)**, the Multi-Picture Search Function can be used even if less than 9 pictures are displayed.
- If you use a video printer equipped with a 5-pin editing socket, you can print the picture that you selected in Step 1.
- The tape positions of the pictures located with the Multi-Picture Search Function are subject to some imprecision.


1
P.B.DIGITAL
SELECT
STORE
OFF/ON
REW/
SLOW
PLAY
FF/
SLOW
STILL ADV PAUSE/ITEM STILL ADV
INDEX STOP/SET INDEX
2
3

Playing Back with Special Effects

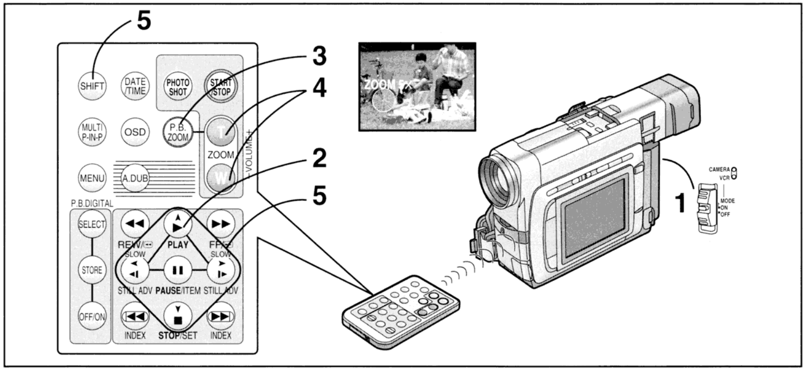
(Playback Digital Effects) (Continued)

■ Wipe Function and Mix Function

After setting [EFFECT SELECT] on the [DIGITAL EFFECT] Sub-Menu to [WIPE] or [MIX]... (➜ 55)

1. **Press the [▶] Button to start playback.**
2. **Press the [STORE] Button at the moment that you want to store as still image in memory.**
   The [WIPE] or [MIX] Indication appears and the picture is stored in memory.
3. **Press the [OFF/ON] Button at the scene at which you want to use a Wipe or Mix effect.**
   The scenes change with a Wipe or Mix effect.

- Operating the Wipe Function and the Mix Function during playback is only possible with Remote Controller.
- It is not possible to add a Wipe or Mix effect during playback of an unrecorded part on the tape.
- If you press the [OFF/ON] Button while the Wipe or Mix is being performed, the effect is paused at that point. If you press the [OFF/ON] Button again, the effect resumes.


5
SHIFT
DATE/TIME
PHOTO SHOT
START/STOP
MULTI/P-IN-P
OSD
P.B. ZOOM
T
ZOOM
W
VOLUME
MENU
A.DUB
P.B.DIGITAL
SELECT
STORE
OFF/ON
REW/
SLOW
PLAY
FF/
SLOW
STILL ADV PAUSE/ITEM STILL ADV
INDEX STOP/SET INDEX
3
4
2
5
1
CAMERA
VCR
MODE
ON
OFF

Enlarging the Playback Picture

(Playback Zoom)

With this function, you can enlarge a part of the picture by up to 10 times during playback.

1. **Slide the [OFF/ON/MODE] Switch from the [ON] position to put the Movie Camera in the VCR Mode.**
2. **Press the Play Button [▶].**
3. **Press the Playback Zoom Button [P.B.ZOOM] on the Remote Controller.**
   The center part of the picture is enlarged about 2 times.

Changing the Zoom Magnification

4. **Press the [W] or [T] Zoom Button on the Remote Controller to change the magnification.**
   You can increase the magnification up to 10×.

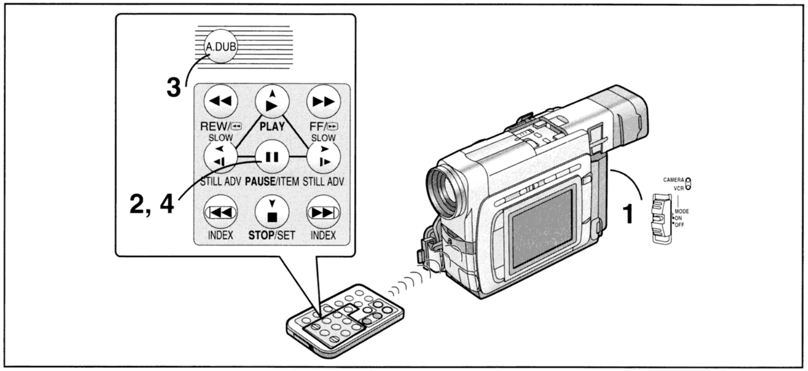
Changing the Part of the Picture to be Enlarged

5. **While pressing the [SHIFT] Button on the Remote Controller, press the Arrow Buttons (▲, ◀, ▶, ▼) for the direction in which you want to shift the enlarged part of the picture.**
   When you stop playback, the position of the part of the picture to be enlarged is automatically reset to the center.

Cancelling the Playback Zoom Function

Press the [P.B.ZOOM] Button on the Remote Controller.

- In the Playback Zoom Mode, it is not possible to adjust the sound volume.
- Turning the Movie Camera off or switching it from the VCR Mode over to the Camera Mode automatically cancels the Playback Zoom Mode.
- Even while you are using the Playback Zoom Function, the picture output from the DV Terminal **(➜ 8)** and the Digital Still Picture Terminal **(➜ 78)** is not enlarged.
- The more the picture is enlarged, the more its picture quality deteriorates.
- If you press the [MULTI] Button in the Playback Zoom Mode, the zoom magnification becomes 1×.
- It is not possible to use the Mirror Mode of the Digital Effects and the Playback Zoom Function at the same time. **(➜ 55)**



Adding New Sound on a Recorded Cassette (Audio Dubbing)

To perform audio dubbing, the Remote Controller is necessary.

You can add music or narration on a recorded cassette.

- If you perform audio dubbing onto a tape that was recorded with [AUDIO REC] on the [OTHER FUNCTIONS] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu set to [16bit], the original sound is erased. (If you intend to perform audio dubbing but also want to keep the original sound, be sure to set [AUDIO REC] to [12bit] before making the original recording.)
- It is not possible to perform audio dubbing onto recordings made in the LP Mode. **(➜ 14)**

1 Insert the recorded cassette and slide the [OFF/ON/MODE] Switch from the [ON] position to put the Movie Camera in the VCR Mode.

Make sure that the erasure prevention slider of the cassette is set to [REC].

2 At the point from which you want to insert the new sound, switch the Movie Camera over to the Still Playback Mode.

Using Cue Playback, Review Playback or Variable Speed Playback makes it easy to search for this point.

3 Press the [A.DUB] Button on the Remote Controller.

4 Press the Pause Button [❚❚] on the Remote Controller to start audio dubbing.

Stopping Audio Dubbing

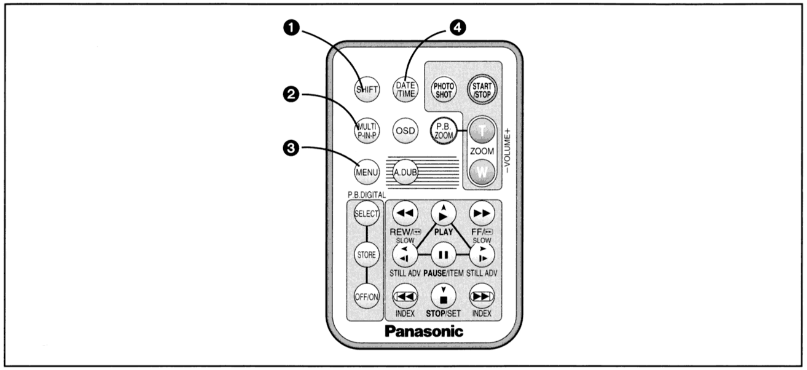
Press the Pause Button [❚❚] on the Remote Controller.
The Movie Camera is again in the Still Playback Mode.

Playing Back the Sound Recorded with Audio Dubbing

Depending on the setting selected for [12bit AUDIO] on the [OTHER FUNCTIONS] Sub-Menu of the [VCR FUNCTIONS] Main-Menu, the sound added with audio dubbing and the original sound are played back as follows:

ST1: The original sound alone is played back.
ST2: The dubbed sound alone is played back.
MIX: The original sound and the sound added with audio dubbing are played back together.

- It is not possible to perform audio dubbing on an unrecorded part of the tape.
- If there was an unrecorded part on the tape when audio dubbing was performed, picture and sound distortion occur at that tape portion during playback.
- If you reset the Tape Counter to zero at the point where you want the audio dubbing to end and turn on the Memory Stop Function **(➜ 104)**, the audio dubbing automatically stops when the tape reaches that point.



Remote Controller

Using the wireless Remote Controller supplied with the Movie Camera allows operating most of the Movie Camera's major functions from a distance.

Buttons on the Remote Controller

❶ Shift Button [SHIFT]

To change the part of the picture to be enlarged in the Playback Zoom Mode when pressed together with one of the Direction Buttons. **(➜ 62)**
In this case, the functions of the following buttons are changed:

Play Button → Upward Direction Button [▲]
Slow/Still Advance Button → Left/Right Direction Button [◀, ▶]
Stop Button → Downward Direction Button [▼]

❷ Multi-Picture/Picture-in-Picture Button [MULTI/P-IN-P]

To operate the same functions as with the corresponding button on the Movie Camera. **(➜ 44, 45, 47, 56, 57, 58)**

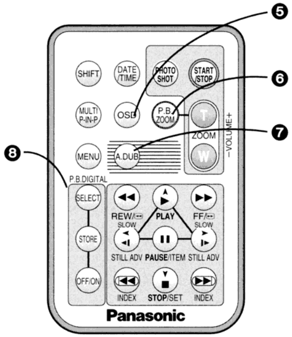
❸ Menu Button [MENU]

To display the menu. **(➜ 83)**
In this case, the functions of the following buttons are changed:

Pause Button → Item Button
To select items on the Menu.
Stop Button → Setting Button
To set the mode for the selected item.

❹ Date and Time Button [DATE/TIME]

To make the Date/Time Indication appear or disappear in the picture during recording or playback. **(➜ 108)**


⑤
⑥
⑦
⑧
SHIFT
DATE/TIME
PHOTO SHOT
START/STOP
MULTI P-IN-P
OSD
P.B. ZOOM
T
ZOOM
W
–VOLUME+
MENU
A.DUB
P.B.DIGITAL
SELECT
STORE
OFF/ON
REW/
PLAY
FF/
SLOW
STILL ADV
PAUSE/ITEM
STILL ADV
INDEX
STOP/SET
INDEX
Panasonic

⑤ Indication Output Button [OSD]
To display the function and operation indications on a connected TV. **(→ 31)**

⑥ Playback Zoom Button [P.B.ZOOM]
To enlarge a part of the playback picture. **(→ 62)**

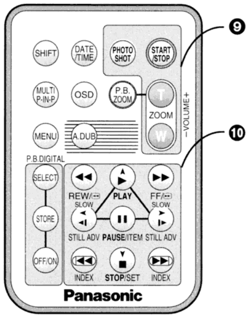
⑦ Audio Dubbing Button [A.DUB]
To perform audio dubbing. **(→ 63)**

⑧ Playback Digital Effects

Selection Button [SELECT]
To select the desired digital effect for [EFFECT SELECT] on the [DIGITAL EFFECT] Sub-Menu of the [VCR FUNCTIONS] Main-Menu. **(→ 55)**

Store Button [STORE]
To store a still picture in memory for the Wipe or Mix Function. **(→ 61)**

Off/On Button [OFF/ON]
To suspend the selected digital effect or re-activate it. **(→ 55)**
To start a Wipe or Mix transition from the still picture stored in memory. **(→ 61)**


⑨
⑩
SHIFT
DATE/TIME
PHOTO SHOT
START/STOP
MULTI P-IN-P
OSD
P.B. ZOOM
T
ZOOM
W
–VOLUME+
MENU
A.DUB
P.B.DIGITAL
SELECT
STORE
OFF/ON
REW/
PLAY
FF/
SLOW
STILL ADV
PAUSE/ITEM
STILL ADV
INDEX
STOP/SET
INDEX
Panasonic

⑨ Controls for Recording and Sound Volume

Photoshot Button [PHOTO SHOT]
To record still pictures. **(→ 22)**

Recording Start/Stop Button [START/STOP]
To start and pause recording. **(→ 17)**

Zoom/Sound Volume Buttons [ZOOM/VOLUME]

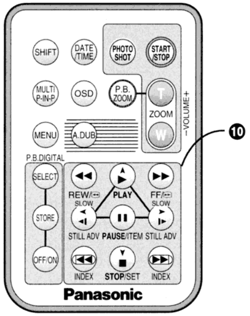
CAMERA Mode:	To zoom in and out. **(→ 20, 21)**
VCR Mode:	To adjust the volume of the playback sound. **(→ 27)** To change the zoom magnification of the Playback Zoom. **(→ 62)**

⑩ Controls for Playback and Menu Settings

Rewind/Review Button [◀◀]
To start review playback **(→ 28)** if pressed during normal playback; and to rewind the tape if pressed in the Stop Mode.
Also to activate the Camera Search Function **(→ 33)** in reverse direction if kept pressed in the Recording Pause Mode. Pressing it briefly activates the Recording Check Function **(→ 18)**.

Fast-forward/Cue Button [▶▶]
To start cue playback **(→ 28)** if pressed during normal playback; and to fast-forward the tape if pressed in the Stop Mode.
Also to activate the Camera Search Function **(→ 33)** in forward direction if kept pressed in the Recording Pause Mode.

Play Button [▶]
To start playback. **(→ 27)**
Or, when pressed together with the [SHIFT] Button, to shift upward the enlarged part of the picture in the Playback Zoom Mode. **(→ 62)**


⑩
SHIFT
DATE/TIME
PHOTO SHOT
START/STOP
MULTI P-IN-P
OSD
P.B. ZOOM
T
ZOOM
W
–VOLUME+
MENU
A.DUB
P.B.DIGITAL
SELECT
STORE
OFF/ON
REW/
PLAY
FF/
SLOW
STILL ADV
PAUSE/ITEM
STILL ADV
INDEX
STOP/SET
INDEX
Panasonic

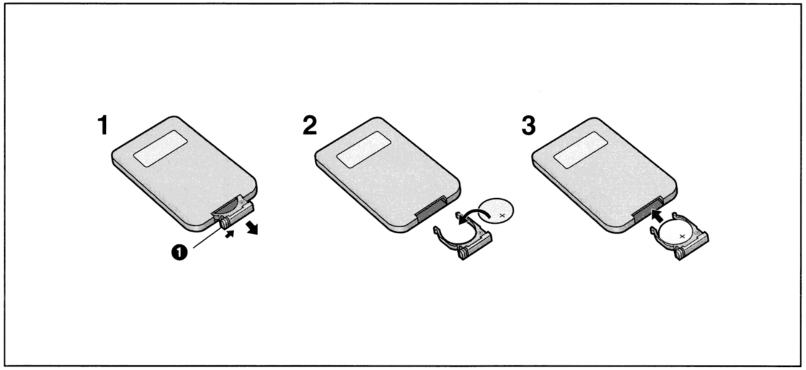
⑩ Controls for Playback and Menu Setting (Continued)

Slow Motion/Still Advance Button [◂I, I▸]
To perform Slow Motion Playback if pressed in the Normal Playback Mode; and to perform Still Advance Playback if pressed in the Still Playback Mode. **(→ 29, 30)**
(◂I: in reverse direction, I▸: in forward direction)
Or, when pressed together with the [SHIFT] Button, to shift to the left or right the enlarged part of the picture in the Playback Zoom Mode. **(→ 62)**

Index Search Button [I◀◀, ▶▶I]
To search for recorded scenes marked with an index signal and for still images recorded in the Photoshot Mode.
(I◀◀: in reverse direction, ▶▶I: in forward direction)
(→ 36, 37)
To locate the tape position of a small still picture displayed in the Multi-Picture Mode. **(→ 60)**
(In this case, select the desired still picture on the screen and then press either button.)

Stop Button [■]
To stop the tape. **(→ 27)**
Or when the menu is displayed, to set a desired mode or value for the selected item. **(→ 83)**
Or, when pressed together with the [SHIFT] Button, to shift downward the enlarged part of the picture in the Playback Zoom Mode. **(→ 62)**

Pause Button [❚❚]
To pause playback. **(→ 30)**
The playback picture stands still.
Or when the menu is displayed, to select an item. **(→ 83)**



Remote Controller (Continued)

■ Inserting the Button-type Battery

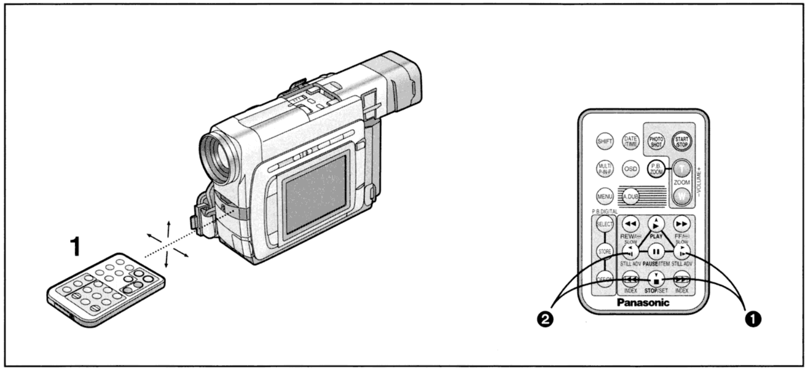
Insert the supplied button-type battery before using the Remote Controller.

1. **Pull out the Battery Holder while pressing the Stopper ❶.**
2. **Insert the button-type battery with the stamped (+) mark facing upward.**
3. **Insert the Battery Holder into the Remote Controller.**

- When the button-type battery is exhausted, replace it with a new CR2025 battery.
(The life of the battery is about 1 year. However, it depends on the frequency of use.)
- **Keep the button-type battery out of the reach of children.**
- Make sure you insert the battery with its poles correctly aligned.

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.



■ Using the Remote Controller

1. **Aim the Remote Controller at the Remote Control Sensor on the Movie Camera and press the appropriate button.**
Distance to the Movie Camera: Less than 5 metres.
Angle: Approximately 15° up, down, left and right from centre axis.

- The operative range described above is valid for using the Remote Controller indoors.
When using it outdoors or under strong lights, it may not work correctly even within the above range.
- Within a distance of about 1 metre, it is also possible to use the Remote Controller from the side (LCD Monitor side).

Selecting the Remote Controller Mode

When using two Movie Cameras at the same time, selecting different Remote Controller Modes makes it possible to operate them separately.

- If the Remote Controller Mode set on the Movie Camera and on its Remote Controller are not matched, the [REMOTE] Indication appears.

Setting to Be Made on the Movie Camera:

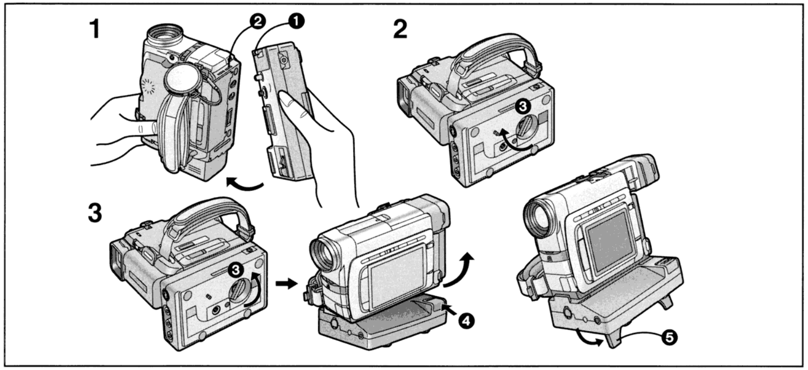
Set [REMOTE] on the [OTHER FUNCTIONS] Sub-Menu to the desired Remote Controller Mode.

Setting to Be Made on the Remote Controller:

[VCR1]:Press the [❙▶] Button and [■] Button simultaneously. ❶

[VCR2]:Press the [◀❙] Button and [■] Button simultaneously. ❷

- Replacing the button-type battery in the Remote Controller automatically resets it to the [VCR1] Mode.



Using the Output Terminal Box [AV ONE TOUCH STATION]

When you want to connect the Movie Camera to a TV for playback or to other video equipment for editing and other purposes, attach the Output Terminal Box [AV ONE TOUCH STATION].

- Before attaching the Output Terminal Box [AV ONE TOUCH STATION] to the Movie Camera, clean the Multi Terminal on the underside of the Movie Camera.

Attaching the Output Terminal Box [AV ONE TOUCH STATION]

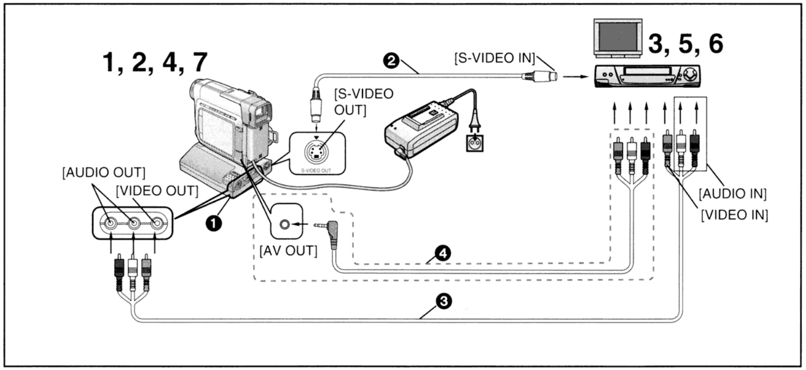
1. **Insert the protruding hook ❶ of the Output Terminal Box [AV ONE TOUCH STATION] into the groove ❷ on the front of the Movie Camera and attach the Output Terminal Box in the direction of the arrow until it locks with a click.**
2. **Fasten the locking screw ❸ to attach the Output Terminal Box securely.**

Removing the Output Terminal Box [AV ONE TOUCH STATION]

3. **Loosen the locking screw ❸ and remove the Output Terminal Box while pressing the [PUSH RELEASE] Button ❹.**
Hold both the Movie Camera and the Output Terminal Box firmly to prevent them from dropping.

Stand

For easier viewing of the playback picture on the LCD Monitor when placing the Movie Camera on a table, etc., you can extend the Stand ❺ on the underside of the Box. This automatically extends an additional support on the opposite side of the Output Terminal Box [AV ONE TOUCH STATION].



Copying onto an S-VHS (or VHS) Cassette (Dubbing)

You can copy the picture and sound recorded on this Movie Camera onto an S-VHS or VHS cassette in a home video recorder.

After making the connections shown above, perform the necessary operations.

- To connect the Movie Camera to the VCR, you can use either the AV Cable ❸ or ❹, however, do not connect both cables at the same time.
- Before copying, be sure to press the [OSD] Button on the Remote Controller (**➜ 66**) so that no indications are visible. Otherwise, the displayed tape counter and function indications are also copied.

Movie Camera:

1. **Slide the [OFF/ON/MODE] Switch from the [ON] position to put the Movie Camera in the VCR Mode.**
2. **Insert the recorded cassette.**

VCR:

3. **Insert an unrecorded cassette with intact erasure prevention tab.**
   As some settings (external input, tape speed, etc.) on the VCR are necessary, please refer to your VCR's operating instructions.

Movie Camera:

4. **Press the Play Button [▶] to start playback.**

VCR:

5. **Start recording.**
6. **Press the Pause or Stop Button to stop recording.**

Movie Camera:

7. **Press the Stop Button [■] to stop playback.**

❶ Output Terminal Box [AV ONE TOUCH STATION]
❷ S-Video Cable
❸ AV Cable (PHONO-PHONO)
❹ AV Cable (PHONO-M3)

Copying with the Help of an Editing Controller

If you connect the Movie Camera to an Editing Controller equipped with 5-pin Edit Socket, this Movie Camera's playback functions can be controlled from the Editing Controller.
(The Output Terminal Box [AV ONE TOUCH STATION] is necessary.)

After connecting all equipment as shown above, perform the necessary operations.

When Connecting the Editing Controller VW-EC500E ❶ (optional)

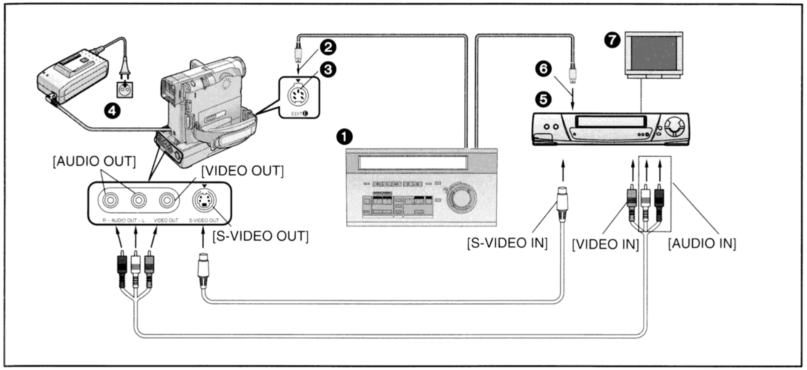
- A VCR equipped with 5-pin Edit Socket is necessary.
- When you connect the VW-EC500E to the Movie Camera, an adjustment on the VW-EC500E is necessary. For the operation of the Editing Controller, refer to its operating instructions.

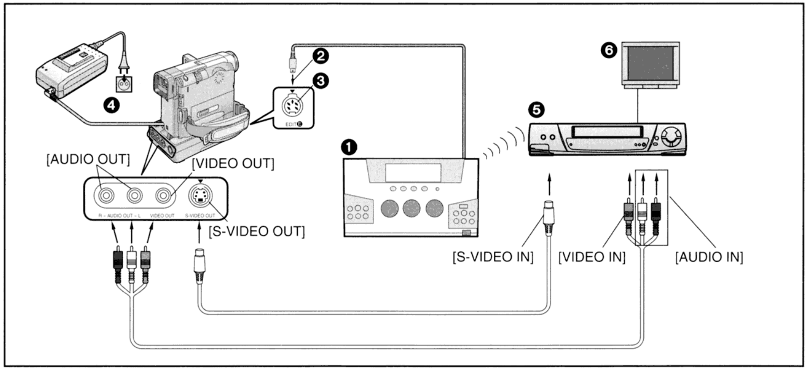
When Editing with Time Code

Set [DISPLAY] on the [DISPLAY SETUP] Sub-Menu of the [VCR FUNCTIONS] Main-Menu to [TIMECODE] to make the Time Code appear.

- When the Time Code is displayed, the Time Code Signal is output from the Edit Socket.
- When the Counter Indication is displayed, the Linear Tape Counter Signal is output.

❷ To Edit Socket
❸ Edit Socket
❹ Connect the AC Adaptor.
❺ VCR (not supplied)
❻ To Edit Socket
❼ TV (not supplied)

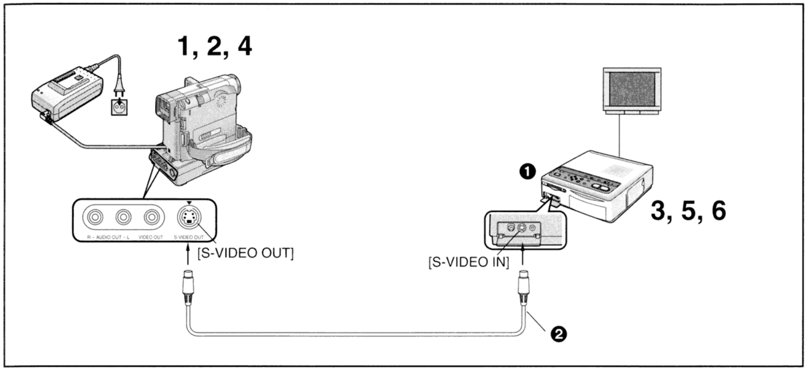




When Connecting the Editing Controller VW-EC1E ❶ (optional)

- When you use the Editing Controller VW-EC1E , it is not necessary to connect it to the Edit Socket on the VCR, as the VCR's operation is performed via infrared remote control. Therefore, editing is also possible onto VCRs not equipped with an Edit Socket.
- For the operation of the Editing Controller, refer to its operating instructions.

❷ To Edit Socket
❸ Edit Socket
❹ Connect the AC Adaptor.
❺ VCR (not supplied)
❻ TV (not supplied)



Using the Movie Camera with a Video Printer

If you connect the Movie Camera to a Video Printer ❶, you can print still pictures from scenes recorded with the Movie Camera.

Movie Camera:

1. **Slide the [OFF/ON/MODE] Switch from the [ON] position to put the Movie Camera in the VCR Mode.**
2. **Insert a recorded cassette.**

Video Printer:

3. **Turn the Video Printer on.**

Movie Camera:

4. **Press the Play Button [▶].**

Video Printer:

5. **Store the image in memory.**
6. **Start printing.**

- For details about the operation of the Video Printer, read its operating instructions.

❷ S-Video Cable

Using the Automatic Printing Function

(Autoprint)

If you connect the Movie Camera to a Video Printer ❶ equipped with a 5-pin Edit Socket, you can use the Autoprint Function to automatically print all still pictures recorded with the Photoshot Function. You can also select and print a single multi-picture from the displayed multi-pictures.

Video Printer:

1. **Turn the Video Printer on.**
2. **Make the necessary settings on the Video Printer according to the input signal.**

Movie Camera:

3. **Slide the [OFF/ON/MODE] Switch from the [ON] position to put the Movie Camera in the VCR Mode.**

To print recorded Photoshot pictures automatically:

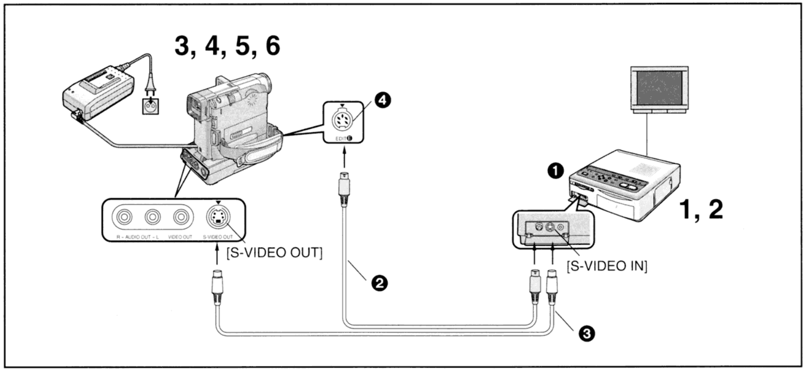
4. **Search for the first still picture from which you want to start printing with the Autoprint Function.**
   If you want to print all still pictures recorded on the cassette, rewind the tape to its beginning.

To print a single multi-picture:

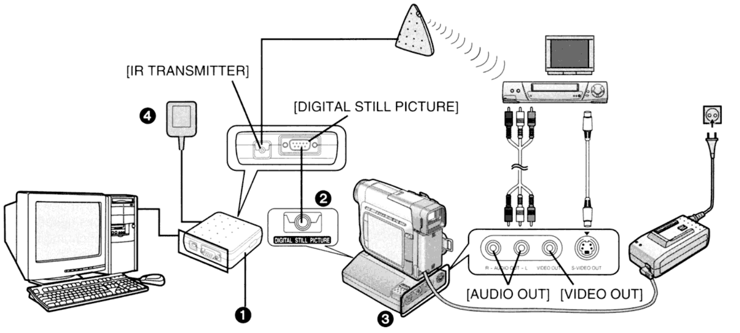
4. **When still pictures are displayed in the Multi-Picture Mode, turn the [PUSH] Dial to select the picture that you want to print. (→ 60)**
5. **Press the [MENU] Button.**
6. **Set [AUTO PRINT] on the [OTHER FUNCTIONS] Sub-Menu to [YES].**
   Automatic printing starts.

- If you want to stop the automatic printing in the middle, press the Stop Button [■] on the Movie Camera.

❷ Edit Cable VW-K5E (optional)
❸ S-Video Cable
❹ Edit Socket



- When the cooling function of the Video Printer is activated and the printing speed slows down, automatic printing may stop. In this case, set [AUTOPRINT] on the [OTHER FUNCTIONS] Sub-Menu on the [VCR FUNCTIONS] Main-Menu to [YES] again.
- If you replace the ink cassette or paper during printing, the same picture may be printed twice.
- If still pictures are recorded successively in the Photoshot Mode, some pictures may be skipped during printing.
- Before storing an image in memory on the Video Printer, press the [OSD] Button **(→ 66)** on the Remote Controller of the Movie Camera so that no indications appear in the picture. Otherwise, the Counter Indication and other function indications are also printed in the picture.
- The [PRINTER ERROR] Indication appears if the Movie Camera is not correctly connected to the Video Printer or when the ink cassette and/or the paper in the Video Printer are not loaded or used up.
- As index signals are not recorded with the still pictures recorded in the Continuous Photoshot Mode, automatic printing of these pictures is not possible.
- If you select one of 9 pictures displayed in the Strobe Multi-Picture Mode and print it with the Autoprint Function, the tape position of the selected picture may not be precise.
- In the following cases, some pictures may be skipped when printing with the Autoprint Function.
  - When you print still pictures recorded in the Photoshot Mode on a video camera of another brand.
  - If you turn the Movie Camera on and off several times (3 times or more) between recording two still pictures in the Photoshot Mode.
  - When you record a still picture in the Photoshot Mode on the same part of a cassette where a Photoshot picture was recorded before.
  - When you select a different recording speed (SP/LP) between the recording of two still pictures in the Photoshot Mode.
  - At the first Photoshot picture to be printed.
- A picture that is recorded very close to the beginning of the tape may not be printed.



Using the Movie Camera with a Computer

The Personal Computer Connection Kit VW-DTA9E (optional), or VW-DTA10E (optional) makes it possible to connect the Movie Camera to a computer and transmit still video images to it. (The Output Terminal Box [AV ONE TOUCH STATION] is also necessary.)

The above illustration shows the connections in case of using the VW-DTA10E. For the VW-DTA9E, refer to its operating instructions.

Computer System Requirements (VW-DTA10E)

DV STUDIO2 can be installed in a PC/AT compatible personal computer which can run Microsoft® Windows® 95/98.

Compatible machines:
Personal computer with 80486DX4 or higher CPU (Pentium™ or higher recommended)

Graphic card:
True Color (approx. 16.7 million colours) recommended (operation also possible even with 256 colours)

Installed memory: 16 MB or more (32 MB or more recommended)
Free hard disk space: At least 16 MB
Disk drive: CD-ROM drive
Ports: RS-232C (D-sub 9pin) or USB
Other requirements: Mouse

To connect the Movie Camera to the computer, use the Interface Box ❶ contained in the Personal Computer Connection Kit.

- To use the DV STUDIO2 software via USB, a computer with Windows® 98 preinstalled is necessary.
- Pictures that you intend to import from cassette into computer applications should be recorded in the SP Mode.
- When recording, take care that the Time Code is uninterrupted from the beginning of the tape.
- For detailed explanations on the operating environment, connections and operations, refer to the Personal Computer Connection Kit's operating instructions.

❷ Digital Still Picture Terminal

❸ Output Terminal Box [AV ONE TOUCH STATION]

❹ AC Adaptor

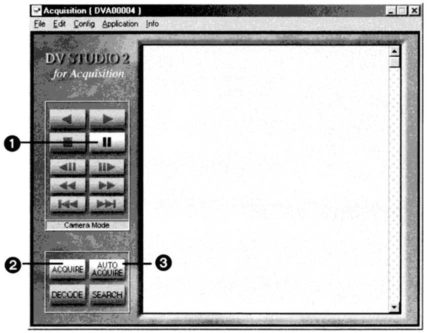
For Those Who Use the Personal Computer Connection Kit (VW-DTA10E)

With the Personal Computer Connection Kit (VW-DTA10E; optional), you can perform the following operations:

- Importing still pictures into the computer when the Movie Camera is in the VCR Mode
- Importing still pictures into the computer when the Movie Camera is in the Camera Mode
- Easy editing

In these Operating Instructions, only the operations for importing still pictures into the computer with the Movie Camera in the Camera Mode are explained. For the other functions, refer to the operating instructions of the Personal Computer Connection Kit (VW-DTA10E).

- When the Movie Camera is in the Camera Mode, it is not possible to perform Easy Editing by using [DV STUDIO2 for Editing].
- Follow the operation steps explained on pages 81 - 82 after making all necessary connections and installing the software of the Personal Computer Connection Kit on the computer.
- To be able to operate the Movie Camera from the computer (e.g. to locate the position on the cassette of a picture in a DV album, or to decode a picture acquired in the Fast Preview Mode), select the VCR Mode.
- Communications may sometimes be interrupted by the operations of the OS or other software that is running simultaneously. If this should happen, reconnect after the other operation is complete.



Parts and their functions (Camera Mode)

When the Movie Camera is in Camera Mode, only the buttons that can actually be used are active.

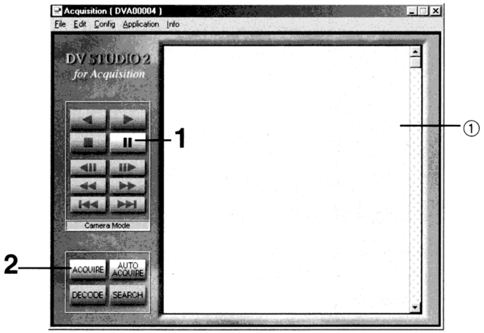
- The functions of the following on-screen buttons are different from those of the same buttons on the Movie Camera.

❶ **Still [❚❚]**
To capture a still picture through the camera lens, or to cancel the still picture mode.

❷ **Acquire [ACQUIRE]**
Click this button to acquire the scene as a still picture.

❸ **Auto acquire [AUTO ACQUIRE]**
The scene is automatically acquired as still pictures.

For information on functions not described here, see "Parts and their functions" of the Personal Computer Connection Kit's operating instruction (VW-DTA10E).



Acquiring digital still pictures in Camera Mode to create a DV album

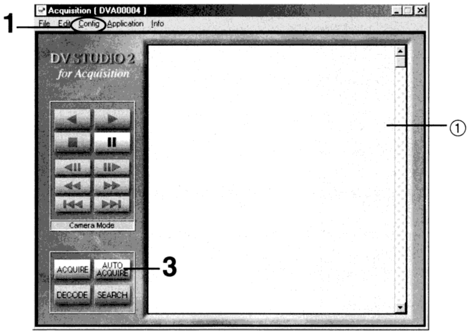
Use the procedure described below to acquire a digital still picture through the camera lens. Connect your Movie Camera and personal computer. Next, set the Movie Camera to Camera Mode and open the application.

- In this mode, operate the Movie Camera without a cassette inserted. Otherwise it automatically switches off to conserve battery power.
- In this mode, turn off the Movie Camera's Demonstration Mode.
- The functions of the following on-screen buttons are different from those of the same buttons on the Movie Camera.

1 Point the Movie Camera at the desired object and click [❚❚].
The picture is captured as a still picture.
- If you do not like the picture, you can cancel it by clicking the same button again.

2 Click [ACQUIRE].
Picture acquisition now starts. When acquisition is completed, the acquired picture appears on the picture display ①.
- To capture and acquire another picture, click [❚❚] and then repeat steps 1 and 2.
- To cancel an acquisition, click [Cancel].

- Due to the possibility of an incorrect operation, do not operate the Movie Camera directly when the acquire button has been operated at the DV STUDIO2 end.
- It is not possible to use [Print on Video Printer] in the [File] menu.
- It is not possible to use [Print on Video Printer] and [Search Picture] in the Context Menu.
- When [PROGRESSIVE] in the [CAMERA SETUP] Sub-Menu is set to [AUTO] **(➜ 23)**, the acquired picture has only normal resolution – not the higher "Progressive" resolution.



Automatically acquiring digital still pictures in Camera Mode to create a DV album

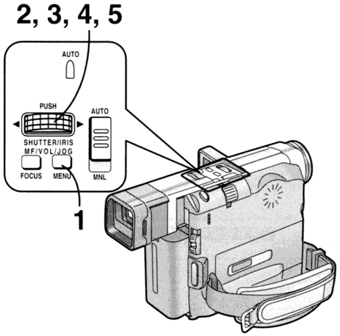
Use the procedure described below to automatically acquire a digital still picture through the camera lens. Connect your Movie Camera and personal computer. Next, set the Movie Camera to Camera Mode and open the application.

1 Select the acquisition method under [Auto Acquire Settings] in [Config].
Select the acquisition interval under "Interval Time".
The Interval times are subject to slight imprecisions.

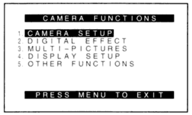
2 Point the Movie Camera at the desired object.

3 Click [AUTO ACQUIRE].
Picture acquisition now starts. Still pictures are acquired at the selected time intervals, and the acquired pictures appear in sequence on the picture display ①.
- To stop auto acquire, click [Cancel].

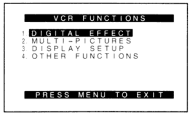
- Due to the possibility of an incorrect operation, do not operate the Movie Camera directly when the acquire button has been operated at the DV STUDIO2 end.



❶


CAMERA FUNCTIONS
1 CAMERA SETUP
2 DIGITAL EFFECT
3 MULTI-PICTURES
4 DISPLAY SETUP
5 OTHER FUNCTIONS
PRESS MENU TO EXIT

❷


VCR FUNCTIONS
1 DIGITAL EFFECT
2 MULTI-PICTURES
3 DISPLAY SETUP
4 OTHER FUNCTIONS
PRESS MENU TO EXIT

Using the Menu Screen

This Movie Camera displays the settings of various functions in Menus to make it easy to select the desired functions and settings.

1 Press the [MENU] Button.
When the [CAMERA] Lamp is lit,Camera Mode Menu ❶ is displayed.
When the [VCR] Lamp is lit, VCR Mode Menu ❷ is displayed.

2 Turn the [PUSH] Dial to select the desired sub-menu.
Turning the [PUSH] Dial changes the highlighted item.

3 Press the [PUSH] Dial to display the selected sub-menu.

4 Turn the [PUSH] Dial to select the item to be set.

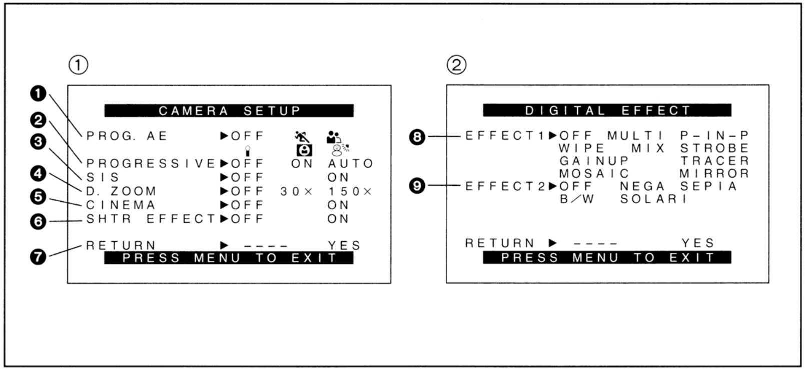
5 Press the [PUSH] Dial to set the selected item to the desired mode.
Every press moves the cursor [▶] to the next mode.
Settings for the menu item(s) that cannot be used due to the combination of the selected functions are displayed in dark blue.

- While the menu is displayed, recording or playback is not possible. During playback, displaying the menu is possible, but not during recording.
- You can also perform the above operations by using the Remote Controller. **(➜ 65)**

Exiting the Menu
Press the [MENU] Button again.

Note About the Settings Made on the Menu

The settings you selected on the Menu are maintained when you turn the Movie Camera off. However, if you disconnect the power supply unit (Battery or AC Adaptor) from the Movie Camera before turning it off, the selected settings may not be maintained.


①
②
CAMERA SETUP
❶ PROG. AE ▶OFF
❷ PROGRESSIVE▶OFF ON AUTO
❸ SIS ▶OFF ON
❹ D. ZOOM ▶OFF 30× 150×
❺ CINEMA ▶OFF ON
❻ SHTR EFFECT▶OFF ON
❼ RETURN ▶ ---- YES
PRESS MENU TO EXIT
DIGITAL EFFECT
❽ EFFECT1▶OFF MULTI P-IN-P
WIPE MIX STROBE
GAINUP TRACER
MOSAIC MIRROR
❾ EFFECT2▶OFF NEGA SEPIA
B/W SOLARI
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Menu Functions

The illustrations of the menus are intended for explaining the functions; the actual menus look somewhat different.

Camera Mode Main-Menu [CAMERA FUNCTIONS]

1. **CAMERA SETUP**
2. **DIGITAL EFFECT**
3. **MULTI-PICTURES**
4. **DISPLAY SETUP**
5. **OTHER FUNCTIONS**

[CAMERA SETUP] Sub-Menu ①

❶ **Auto Exposure Mode [PROG.AE] (➜ 39)**

❷ **Progressive Photoshot Mode [PROGRESSIVE] (➜ 23)**

❸ **Super Image Stabilizer [SIS] (➜ 26)**

❹ **Digital Zoom [D.ZOOM] (➜ 21)**

❺ **Cinema-like Format Recording [CINEMA] (➜ 25)**

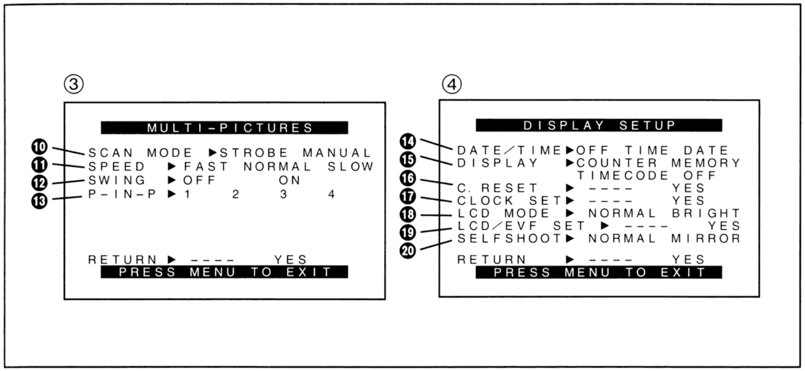
❻ **Shutter Effect [SHTR EFFECT] (➜ 22)**

❼ **Returning to the Camera Mode Main-Menu [RETURN]**
If you set [RETURN] to [YES], the menu changes back to the [CAMERA FUNCTIONS] Main-Menu.

[DIGITAL EFFECT] Sub-Menu ②

❽ **Digital Effects 1 [EFFECT1] (➜ 41)**

❾ **Digital Effects 2 [EFFECT2] (➜ 42)**


③
④
MULTI-PICTURES
❿ SCAN MODE ▶STROBE MANUAL
⓫ SPEED ▶FAST NORMAL SLOW
⓬ SWING ▶OFF ON
⓭ P-IN-P ▶1 2 3 4
RETURN ▶ ---- YES
PRESS MENU TO EXIT
DISPLAY SETUP
⓮ DATE/TIME▶OFF TIME DATE
⓯ DISPLAY ▶COUNTER MEMORY
TIMECODE OFF
⓰ C. RESET ▶ ---- YES
⓱ CLOCK SET▶ ---- YES
⓲ LCD MODE ▶ NORMAL BRIGHT
⓳ LCD/EVF SET ▶ ---- YES
⓴ SELFSHOOT▶ NORMAL MIRROR
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Camera Mode Main-Menu [CAMERA FUNCTIONS] (Continued)

[MULTI-PICTURES] Sub-Menu ③

❿ **Multi-Picture Mode [SCAN MODE] (➜ 44, 45)**

⓫ **Strobe Multi-Picture Speed [SPEED] (➜ 44)**

⓬ **Swing Mode [SWING] (➜ 44)**

⓭ **Position of Small Picture inside Normal Picture [P-IN-P] (➜ 47)**

[DISPLAY SETUP] Sub-Menu ④

⓮ **Date and Time Indication [DATE/TIME] (➜ 108)**

⓯ **Counter Display Mode [DISPLAY] (➜ 108)**

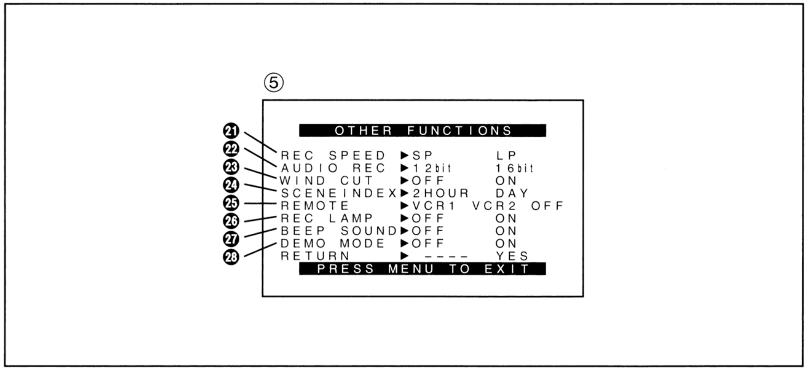
⓰ **Counter Reset [C.RESET] (➜ 104)**
To reset the counter to zero.
However, the Time Code cannot be reset.

⓱ **Date and Time Setting [CLOCK SET] (➜ 88)**

⓲ **LCD Lighting Mode [LCD MODE] (➜ 90)**

⓳ **LCD and Finder Adjustment [LCD/EVF SET] (➜ 90)**

⓴ **Self-Recording [SELFSHOOT] (➜ 19)**


⑤
OTHER FUNCTIONS
(21) REC SPEED ▶SP LP
(22) AUDIO REC ▶12bit 16bit
(23) WIND CUT ▶OFF ON
(24) SCENEINDEX▶2HOUR DAY
(25) REMOTE ▶VCR1 VCR2 OFF
(26) REC LAMP ▶OFF ON
(27) BEEP SOUND▶OFF ON
(28) DEMO MODE ▶OFF ON
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Camera Mode Main-Menu [CAMERA FUNCTIONS] (Continued)

[OTHER FUNCTIONS] Sub-Menu ⑤

(21) **Recording Speed Mode [REC SPEED] (➜ 14)**

(22) **Audio Recording Mode [AUDIO REC] (➜ 63)**

(23) **Wind Noise Reduction [WIND CUT]**
If you set [WIND CUT] to [ON], the noise of the wind hitting the microphone is reduced. However, this also causes a slight deterioration of the sound reproduction in the bass range.

(24) **Scene Index Mode [SCENEINDEX] (➜ 35)**

(25) **Remote Controller Mode [REMOTE] (➜ 70)**

(26) **Recording Lamp [REC LAMP] (➜ 17)**

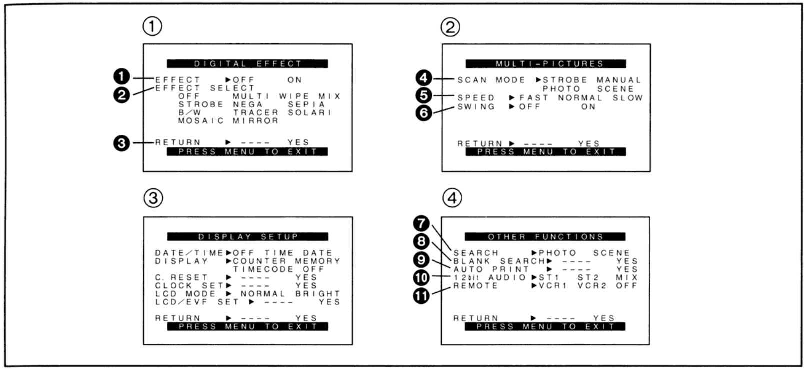
(27) **Beep Sound [BEEP SOUND]**
If you set [BEEP SOUND] to [ON], a confirmation/alarm beep sound is emitted in the following cases:

1 Beep
- When you start recording
- When you switch the [OFF/ON/MODE] Switch from [OFF] to [ON]

2 Beeps
- When you pause recording

10 Beeps
- When you operate the Movie Camera in an inappropriate way before or during recording

(28) **Demonstration Mode [DEMO MODE]**
If you connect the AC Adaptor to the Movie Camera, set the [OFF/ON/MODE] Switch to [CAMERA] without any cassette inserted, and leave it on for approximately 10 minutes without performing any operation, the Movie Camera automatically switches over to the Demonstration Mode to show its functions.
Pressing a button or performing some other operation suspends the Demonstration Mode. Leaving the Movie Camera again on for more than 10 minutes without operating it, causes the demonstration to start again.
Also, when you set [DEMO MODE] to [ON] and then exit the menu, the demonstration starts.
To cancel the Demonstration Mode, insert a cassette or set [DEMO MODE] to [OFF].



①

```
DIGITAL EFFECT
EFFECT     ▶OFF      ON
EFFECT SELECT
   OFF     MULTI WIPE MIX
   STROBE  NEGA    SEPIA
   B/W     TRACER  SOLARI
   MOSAIC  MIRROR

RETURN     ▶ ----    YES
PRESS MENU TO EXIT
```

②

```
MULTI-PICTURES
SCAN MODE ▶STROBE MANUAL
           PHOTO  SCENE
SPEED   ▶FAST NORMAL SLOW
SWING   ▶OFF        ON

RETURN ▶ ----      YES
PRESS MENU TO EXIT
```

③

```
DISPLAY SETUP
DATE/TIME▶OFF TIME DATE
DISPLAY  ▶COUNTER MEMORY
          TIMECODE OFF
C. RESET ▶ ----    YES
CLOCK SET▶ ----    YES
LCD MODE ▶ NORMAL BRIGHT
LCD/EVF SET ▶ ----    YES

RETURN   ▶ ----    YES
PRESS MENU TO EXIT
```

④

```
OTHER FUNCTIONS
SEARCH       ▶PHOTO  SCENE
BLANK SEARCH▶ ----     YES
AUTO PRINT   ▶ ----    YES
12bit AUDIO ▶ST1  ST2  MIX
REMOTE       ▶VCR1 VCR2 OFF

RETURN       ▶ ----   YES
PRESS MENU TO EXIT
```

VCR Mode Main-Menu [VCR FUNCTIONS]

1. **DIGITAL EFFECT**
2. **MULTI-PICTURES**
3. **DISPLAY SETUP**
4. **OTHER FUNCTIONS**

[DIGITAL EFFECT] Sub-Menu ①

❶ Digital Effect Off/On [EFFECT] (➜ 55)

❷ Digital Effect Selection [EFFECT SELECT] (➜ 55)

❸ Returning to the VCR Mode Main-Menu [RETURN]
If you set [RETURN] to [YES], the Menu changes back to the [VCR FUNCTIONS] Main-Menu.

[MULTI-PICTURES] Sub-Menu ②

❹ Multi-Picture Mode [SCAN MODE] (➜ 56, 57, 58)

❺ Strobe Multi-Picture Speed [SPEED] (➜ 56)

❻ Swing Mode [SWING] (➜ 56)

[DISPLAY SETUP] Sub-Menu ③
All items on the [DISPLAY SETUP] Sub-Menu are the same as those on the [DISPLAY SETUP] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu. **(➜ 85)**

[OTHER FUNCTIONS] Sub-Menu ④

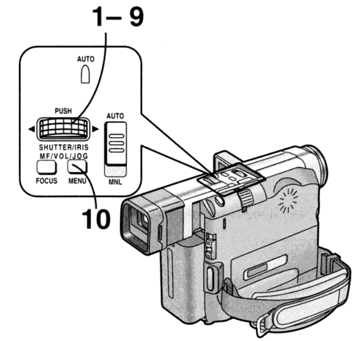
❼ Index Search Mode [SEARCH] (➜ 35, 36, 37)

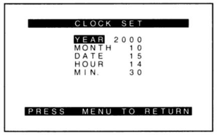
❽ Blank Search [BLANK SEARCH] (➜ 34)

❾ Automatic Printing [AUTO PRINT] (➜ 76)

❿ Audio Output Mode [12bit AUDIO] (➜ 64)

⓫ Remote Controller Mode [REMOTE] (➜70)





```
CLOCK SET
YEAR   2000
MONTH    10
DATE     15
HOUR     14
MIN.     30

PRESS  MENU TO RETURN
```

Setting the Date and Time

If you set [CLOCK SET] on the [DISPLAY SETUP] Sub-Menu to [YES], the menu shown above appears.

For example: To set the clock to 15th October 2000, 14:30.

1 Turn the [PUSH] Dial to set to [2000].
The years change in the following order:
2000→2001→...→2089→2000→...

2 Press the [PUSH] Dial to select [MONTH].

3 Turn the [PUSH] Dial to set to [10].

4 Press the [PUSH] Dial to select [DATE].

5 Turn the [PUSH] Dial to set to [15].

6 Press the [PUSH] Dial to select [HOUR].

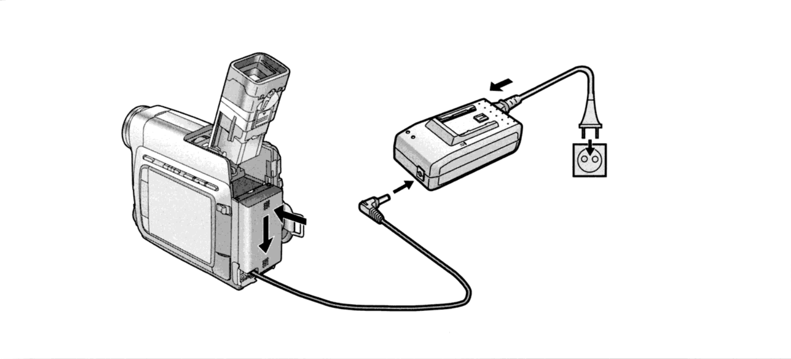
7 Turn the [PUSH] Dial to set to [14].

8 Press the [PUSH] Dial to select [MIN.].

9 Turn the [PUSH] Dial to set to [30].

10 Press the [MENU] Button to finish the date and time setting.
The operation of the clock starts from [00] seconds. Pressing the button one more time makes the menu disappear.

- As the time of the Movie Camera's built-in clock is subject to a slight imprecision, be sure to check the time before recording. If the flashing[⊗] Indication appears, charge the build-in battery **(➜ 89)** and set the date and time again.
- The clock employs the 24-hour system.



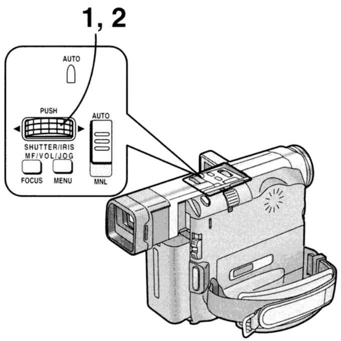
Charging the Built-in Lithium Battery

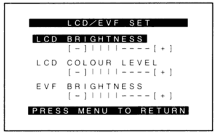
The built-in battery maintains the operation of the clock. When the [⊗] Indication appears, the built-in lithium battery is discharged. Charge the discharged battery in the following way and after charging is finished, set the date and time.

1 Connect the AC Adaptor to the Movie Camera and to an AC mains socket. (➜ 10)

2 Leave the Movie Camera turned off.

3 Leave the Movie Camera in this condition for approximately 4 hours.
After charging for 4 hours, the built-in lithium battery can power the clock for approximately 3 months.





```
      LCD/EVF SET
 LCD BRIGHTNESS
        [-]||||----[+]
 LCD COLOUR LEVEL
        [-]||||----[+]
 EVF BRIGHTNESS
        [-]||||----[+]
 PRESS MENU TO RETURN
```

Adjusting the LCD Monitor/Finder

If you set [LCD/EVF SET] on the [DISPLAY SETUP] Sub-Menu of the [VCR FUNCTIONS] or the [CAMERA FUNCTIONS] Main-Menu to [YES], the following items are displayed.

LCD Brightness [LCD BRIGHTNESS]

To adjust the brightness of the LCD screen. The Bar Indication is divided into 8 steps. The more vertical bars are shown, the brighter is the screen.

LCD Colour Level [LCD COLOUR LEVEL]

To adjust the colour saturation of the LCD screen. The Bar Indication is divided into 8 steps. The more vertical bars are shown, the stronger are the colours.

Finder Brightness [EVF BRIGHTNESS]

To adjust the brightness of the Finder. The Bar Indication is divided into 8 steps. The more vertical bars are shown, the brighter is the screen.

1. **Press the [PUSH] Dial to select the item that you want to adjust.**
2. **Turn the [PUSH] Dial. Turning it increases or decreases the number of vertical bars of the Bar Indication.**

If you use the Remote Controller for these adjustments, press the [ITEM] Button to select the item, and then press the [SET] Button to adjust it. Keeping the [SET] Button pressed changes the number of bars.

Increasing the Brightness of the Whole LCD Monitor Screen

Set [LCD MODE] on the [DISPLAY SETUP] Sub-Menu of the [VCR FUNCTIONS] or the [CAMERA FUNCTIONS] Main-Menu to [BRIGHT].

- These adjustments have no influence on the actually recorded picture.

Cautions for Use

Take care that no water enters the Movie Camera when using it in the rain and snow or on the beach.

- The Movie Camera and the cassette could become damaged. (It might not be repairable.)
- If seawater has accidentally splashed on the Movie Camera, moisten a soft cloth with tap water, wring it well and wipe the camera body carefully with it. Then thoroughly wipe it with a soft, dry cloth.

Keep the Movie Camera away from magnetized equipment (TVs, Video games, etc.).

- If you use the Movie Camera on or near a TV, the electromagnetic radiation may cause picture and sound distortion.
- Strong magnetic fields generated by speakers and large motors may damage the recordings on the tape and distort the picture.
- The electromagnetic radiation from micro-processors can adversely influence the Movie Camera and cause picture and sound distortion.
- If the Movie Camera is adversely influenced by magnetized equipment and does not work correctly, turn the Movie Camera off, remove the Battery or disconnect the AC Adaptor and attach the Battery or connect the AC Adaptor again. Then turn the Movie Camera on.

Do not use the Movie Camera near a radio transmitter or high-voltage power line.

- If you record near a radio transmitter or high-voltage power line, the recorded picture and sound may be adversely influenced.

Do not use the Movie Camera for surveillance and other industrial applications.

- If the Movie Camera is being used for a long time, the inside temperature could rise excessively and this may cause malfunction.
- This Movie Camera is not designed for industrial use.

Take care that no sand and fine dust enters the Movie Camera when using it on a beach or similar places.

- Sand and dust could damage the Movie Camera and cassette. (Be careful when inserting and removing the cassette.)

Do not spray insecticide or volatile agents on the Movie Camera.

- Such agents could deform the body and cause the surface coating to peel off.
- Do not leave the Movie Camera in direct contact with rubber or plastic products for a long time.

Do not use benzine or thinner for cleaning.

- They could deform the body and cause the surface coating to peel off.
- Before cleaning, remove the Battery or unplug the AC Mains Lead from the AC mains socket.
- Wipe the Movie Camera with a soft, clean cloth. To remove persistent stains, wipe with a cloth moistened with mild detergent diluted with water, and then finish with a dry cloth.
- When storing or transporting the Movie Camera, place it in a softly padded bag or case to prevent the coating of the camera body from wearing off.

After use, always take out the cassette and remove the Battery or unplug the AC Mains Lead from the AC mains socket.

- If you leave the cassette in the Movie Camera, the tape can become loosened and damaged.
- If you leave the Battery attached to the Movie Camera for a long time, the voltage level may drop excessively so that the Battery cannot be used any more even after charging.

Notes about the AC Adaptor

- When you attach the Battery to the AC Adaptor, the [CHARGE] Lamp flashes for a few seconds while the Battery condition is being checked. Charging then starts and the [CHARGE] Lamp remains lit.
- If the temperature of the Battery is extremely high or extremely low, or if the Battery is excessively discharged because of long storage, the [CHARGE] Lamp may flash for some time and charging will then start automatically. However, if the [CHARGE] Lamp continues to flash after the Battery has cooled down or warmed up sufficiently, some malfunction may have occurred in the Battery or in the AC Adaptor. In this case, consult with your dealer.
- When the Battery is warm, charging takes longer than usual.
- When you use the AC Adaptor near a radio, the radio reception may be distorted. Keep the AC Adaptor more than 1 metre away from the radio.
- When the AC Adaptor is in use, it may emit a whirring sound. However, this is normal.
- After use, be sure to disconnect the AC Mains Lead from the AC mains socket. (If you leave it connected, a small amount of electricity is consumed.)
- Always keep the terminals of the AC Adaptor and the Battery clean.

■ Condensation

Determining Whether Condensation Has Formed Inside and Remedy for Condensation

If the Condensation Indication flashes after you turn on the Movie Camera, condensation has formed inside the Movie Camera. In this case, the Movie Camera automatically switches off after approximately 1 minute.
Remedy as follows:

1. **Take out the cassette.**
   All other functions do not work. Depending on the amount of condensation, it may not be possible to take out the cassette. In this case, wait 2–3 hours before taking out the cassette.
2. **Leave the Cassette Compartment open and wait for 2–3 hours.**
   The required time depends on the amount of condensation and the ambient temperature.
3. **After 2–3 hours, turn the Movie Camera on and check if the Condensation Indication is not displayed.**
   Even if the Condensation Indication is no longer displayed, wait 1 more hour for added safety before using the Movie Camera again.

Pay Attention to Condensation Even Before the Condensation Indication Appears.

- As condensation forms gradually, the Condensation Indication may not appear for the first 10–15 minutes after condensation has formed inside.
- In an extremely cold place, the condensation could freeze and turn into frost. In such a case, it takes an additional 2–3 hours for the frost to first melt into condensation and then to be dissolved.

Remedy for a Fogged-up Lens

Set the [OFF/ON/MODE] Switch to [OFF] and leave the Movie Camera in this condition for about 1 hour. When the lens has reached about the same temperature as its surroundings, it automatically clears up.

■ Video Head Clogging and Remedy

When the video heads (which contact the tape) are dirty, the playback picture contains mosaic-like patterns or the whole screen becomes black. If they become even more dirty, the recording performance deteriorates and in the worst case, recording may not be possible at all.

Causes of Dirty Video Heads

- A lot of dust in the air
- High-temperature and high-humidity environment
- Damaged tape
- Long-time use

Using the Mini-DV Format Digital Video Head Cleaner

1. **Insert the Head Cleaner into the Movie Camera in the same way as a video cassette.**
2. **Press the Play Button [▶], and after approximately 20 seconds press the Stop Button [■]. (Do not rewind the tape.)**
3. **Take out the Head Cleaner. Insert a video cassette, perform recording and then play it back to check the picture.**
4. **If the picture is still not clear, repeat above operation steps 1 - 3. (Do not use the Head Cleaner more than 3 times in succession.)**

Notes:

- Do not rewind the tape in the Head Cleaner after every use. Rewind it only after the tape has reached its end, and then use it again in the same way from the beginning.
- If the video heads again become clogged with dirt soon after cleaning, this might be caused by a damaged tape. In this case, stop using that cassette immediately.
- Be careful not to clean the video heads too much. (Too much cleaning could cause excessive wear to the video heads. If the video heads get worn, the picture is not played back clearly even after cleaning.)
- If using the Head Cleaner does not clear the video head clogging, the Movie Camera requires cleaning or repairing by a service centre.
  Please consult with your dealer.
- This Video Head Cleaner is available from service centres.
- Video head cleaning due to clogging is not a malfunction of the product and is not covered by your warranty.

Periodic Inspection

To ensure optimum picture quality, we recommend that you have worn-out parts such as video heads replaced after approximately 1000 hours of use. (However, this depends considerably on the conditions of use such as temperature, humidity and dust.)

■ Optimum Use of the Battery

Special Characteristics of the Battery

This Battery is a rechargeable lithium-ion battery. Its ability to generate electric energy is based on an internal chemical reaction. This reaction is easily influenced by ambient temperature and humidity, and the useful operation time that the Battery can provide becomes shorter at high and low temperatures. When used in extremely cold surroundings, the Battery may only be able to provide approximately 5 minutes of operation time. If the Battery becomes extremely hot, a protection function is activated and prevents the use of the Battery for some time.

After Use, Always Remove the Battery.

Be sure to remove the Battery from the Movie Camera.
(If it is attached to the Movie Camera, a small amount of electric current is consumed even if the Movie Camera is turned off.) Leaving the Battery attached to the Movie Camera for a very long time could cause it to become excessively discharged, so that it cannot be used any more even after charging.

Keep the Battery's Terminals Clean.

Be careful that the terminals do not get plugged up with dust, dirt or other substances.
If you accidentally drop the Battery, confirm that the Battery itself and the terminals are not deformed.
Attaching a deformed Battery to the Movie Camera or to the AC Adaptor could damage the Movie Camera or the AC Adaptor.

Discarding a Battery That Has Become Unusable

- The usable life of the Battery is limited.
- Do not throw the Battery in a fire because it could explode.

■ Precautions for Storage

Before Storing the Movie Camera, Take out the Cassette and Remove the Battery.

Store all equipment in a dry place where the temperature remains relatively constant.
(Recommended temperature is 15°C–25°C and recommended relative humidity is 40%–60%.)

Movie Camera

- Wrap it with a soft cloth to prevent dust from entering.
- Never leave the Movie Camera in places with high temperature.

Battery

- Extremely low or high temperature shortens the Battery life.
- Storing it in places with oily smoke and a lot of dust could cause the terminals to get rusty, and this can result in malfunction.
- **Do not allow metal objects (such as necklaces and hair pins) to touch the battery terminals. Short-circuiting may occur and generate heat, and touching it in this condition could inflict serious burns.**
- Store the Battery in discharged condition. If you store the Battery for a long time, we recommend that you charge it once a year and completely use up the charge before storing it again in discharged condition.

Cassette

- Rewind the tape to its beginning before storing.
  Leaving the cassette with the tape stopped halfway for more than 6 months (depending on the storing condition) loosens the tape. Be sure to rewind it to the beginning.
- Put the cassette in its case to store it.
  Dust, direct sunlight (ultraviolet rays) and humidity could damage the tape. Dust contains hard mineral particles and cassettes with dust damage the video heads and other parts of the Movie Camera. Make it a habit to always put the cassette back into its case.
- Completely wind the tape forward and then rewind it once every half year. Leaving the cassette for more than a year without winding/rewinding it may deform the cassette because of stretching and shrinking of the tape due to changes in temperature and humidity. Also, the tape may stick together.
- Do not place the cassette near strongly magnetized objects or equipment.
- The tape surface is coated with microscopic magnetic particles and they record signals. Such objects as magnetic necklaces and toys have stronger magnetic force than commonly thought, and this could erase the recorded contents and cause noise in picture and sound.

■ Other Useful Information

LCD Monitor

- In places where big changes in temperature occur, condensation may form on the LCD Monitor. Wipe it with a soft, dry cloth.
- If the Movie Camera is very cold when it is turned on, the picture on the LCD Monitor is initially a little darker than normally. However, as the internal temperature rises, the LCD Monitor regains its normal brightness.
- Extremely high precision technology is employed to produce the LCD Monitor screen featuring a total of approximately 200,000 pixels. The result is more than 99.99% effective pixels with a mere 0.01% of the pixels inactive or always lit. However, this is not a malfunction and does not affect the recorded picture.

Finder

- Extremely high precision technology is employed to produce the Finder screen featuring a total of approximately 166,000 pixels. The result is more than 99.99% active pixels, with a mere 0.01% of the pixels inactive or always lit. However, this is not a malfunction and does not affect the recorded picture.
- Do not leave the Finder or the Lens aimed at the sun. This could seriously damage internal parts.

Lens Hood

- Never try to attach any conversion lens onto the front of the Lens Hood; it does not have a threaded mount on the front.
- When you want to attach the Tele Conversion Lens VW-LT3014E (optional), Wide Conversion Lens VW-LW3007E (optional), MC Protector VW-LMC30E (optional) or ND Filter VW-LND30E (optional), first remove the Lens Hood. (When you push the [W/T] Zoom Lever toward [W] after attaching the filter or conversion lens, the four corners of the picture may become dark (vignetting effect).)
- When you have attached the above ND Filter or MC Protector, you can also attach the Lens Hood onto it. It may not be possible to attach other ND filters and MC protectors to the lens.
- If you attach both the ND Filter and a Conversion Lens, the four corners of the picture may become dark (vignetting effect).

Shoe Adaptor

- If you want to attach the External Microphone (VW-VMS1E; optional), etc. to the Movie Camera, the Shoe Adaptor (VW-SK11E; optional) is necessary.

■ Listening to the Playback Sound via Headphones

You can connect the headphones in the following 2 ways:

- By connecting the headphones to the Headphone Conversion Adaptor (VW-CH1E; optional) connected to the [AV OUT] Socket on the Movie Camera. In this case, disconnect the Output Terminal Box [AV ONE TOUCH STATION].
- By connecting the headphones to the [PHONES] Socket on the Output Terminal Box [AV ONE TOUCH STATION].

Microphone Socket

- If you want to perform audio dubbing via an external microphone or audio equipment, connect it to the [MIC] Socket. In this case, the Movie Camera's built-in microphone is turned off.

Glossary

■ Digital Video System

In the digital video system, picture and sound are converted into digital signals and recorded onto the tape.
This completely digital recording allows recording and playback of picture and sound with minimum quality deterioration.
In addition, such data as Time Code, Date and Time are also automatically recorded as digital signals.

Features

- Superior picture resolution
- Excellent signal-to-noise ratio
- Stable pictures
- Minimised quality deterioration in dubbing
- Minimised cross colour distortion
- PCM digital sound
- No picture deterioration in LP Mode
- 6.35 mm-wide tape
- Compact cassette with long recording time
- Minimised quality deterioration in editing
- Time Code editing

Compatibility with S-VHS or VHS Cassettes

As this Movie Camera uses a digital method for recording picture and sound, there is no compatibility with conventional S-VHS or VHS video equipment using analog recording methods.
In addition, the size and shape of the cassette are completely different.

Compatibility with Output Signals

As the video and audio signals output from the audio and video output sockets are analog—the same as in conventional video systems—you can connect this Movie Camera to your S-VHS or VHS VCR or TV for playback.

PCM Digital Sound

For recording of the sound, this Movie Camera offers the choice between two different PCM Audio Recording Modes.

- 16 bit, 48 kHz, 2 channels
- 12 bit, 32 kHz, 4 channels

The "16 bit, 48 kHz, 2 channels" Mode offers superior recording sound quality.
The "12 bit, 32 kHz, 4 channels" Mode lets you record the original sound in stereo on two channels and the dubbed sound in stereo on two separate channels.

Sub Code

The digital recording system offers the added capability of recording sub code containing various data.
The following data is recorded as sub code on this Movie Camera:

- Time code
- Recording date and time
- Index signals for locating still images recorded in the Photoshot Mode
- Index signals for locating the beginning of scenes marked with index signal

■ Focus

If you look at an object through a magnifying glass and move it closer or further away from your eye, you will reach a point where the object becomes clearly visible. Being focused or in focus means that the subject can be seen with optimum clarity and sharpness.

Human Eyes

Human eyes have lenses as well, and when we look at objects at different distances, the shape of these lenses changes automatically so that we can always see these objects clearly.

Movie Camera

The image of the subject enters the Movie Camera through the lens and is converted into an electric signal (video signal) for recording onto magnetic tape. The focus is adjusted either manually or automatically by moving a focusing lens.

Auto Focus Adjustment

The Auto Focus System automatically moves the internal focusing lens forward or backward and adjusts the focus so that the subject can be seen clearly.
The Auto Focus Adjustment has the following characteristics:

- It adjusts until the vertical contours of the subject are as sharp and clean as possible.
- It adjusts the focus on the subjects with strong contrast.
- It adjusts the focus on the subject in the centre of the LCD Monitor or Finder.
  Unlike human eyes, the lens of the Movie Camera cannot instantaneously change the focus from a nearby to a distant subject and vice versa.

Lens Unit

The lens construction used in this Movie Camera generates some clicking noise if the Movie Camera is rocked up and down while it is turned off. This is not a malfunction of the lens unit. This noise does not occur when the Movie Camera is turned on.

For the following subjects and recording situations, the Auto Focus System cannot provide precise adjustment.
Use the Manual Focus Mode instead. (➜ 52)

❶ **Recording subjects with a part of it near the Movie Camera and another part far away from it**
As the Auto Focus adjusts on the centre part of the image, it is often impossible to bring the nearby and distant parts of the subject into focus.
When you want to record a person with a distant mountain in the back, it is not possible to focus on both.

❷ **Recording subjects behind glass covered with dirt or dust**
As the focus is adjusted on the dirty glass, the subject behind the glass is out of focus. When recording a subject across a street on which cars are running, the focus may be adjusted on the cars.

❸ **Recording subjects in dark surroundings**
As the amount of light information entering through the lens is greatly reduced, the Movie Camera cannot adjust the focus precisely.

❹ **Recording subjects surrounded by objects with shiny surfaces or much light reflection**
As the Movie Camera adjusts the focus on objects with shiny surfaces or much light reflection, the subject may go out of focus.
Therefore, when recording at a lake or the sea, evening scenes, fireworks, or under special types of lighting, the subject may be out of focus.

❺ **Recording fast-moving subjects**
As the internal focusing lens is moved mechanically, it cannot follow fast-moving subjects without delay.
Therefore, subjects like children running back and forth may temporarily go out of focus.

❻ **Subjects with weak contrast**
As the Movie Camera adjusts the focus based on vertical contours in the picture, subjects with little contrast such as a white wall may be out of focus.

■ White Balance Adjustment

While most recording with a Movie Camera is probably done outdoors under sunlight, video recording is also done very often under artificial light sources, both indoors and outdoors. However, each of these light sources gives the subject slightly different colours.

Human Eyes

Human eyes can easily adjust to different kinds of lighting and see an object with the same colours even under different lighting.

Movie Camera

Unlike human eyes, the Movie Camera does not have the innate ability to adapt to changes in lighting, and they influence the colours being recorded. Therefore, depending on the light source, the picture would be recorded with a bluish or reddish tint. To minimise the influence of the lighting on the colours of the subject, an adjustment called White Balance Adjustment is necessary.

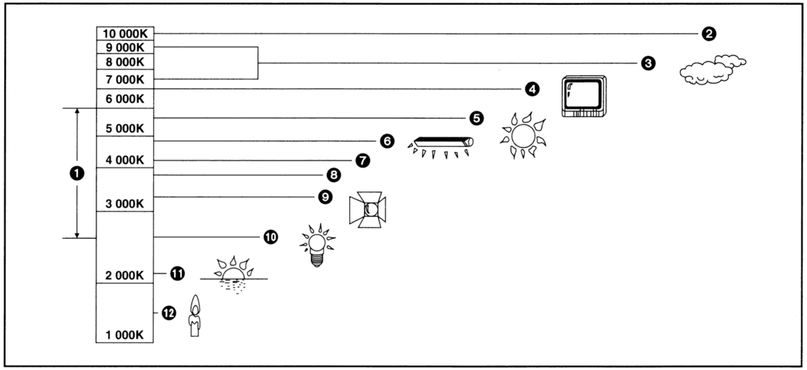
White Balance Adjustment

The White Balance Adjustment determines the colour of the light and adjusts the colours so that white remains pure white. As white is the basic colour of the entire colour spectrum, if white is reproduced correctly, the other colours are correct and natural, too.

Auto White Balance Adjustment

This Movie Camera stores the optimum settings for several common light sources in memory. The Movie Camera judges the recording situation by determining the tint of the light received through the lens and by the White Balance Sensor **(→ 8)**, and it selects the setting for the most similar tint. This function is called Auto White Balance Adjustment.
However, as the white balance settings for only a few light sources are stored in memory, the white balance is not correctly adjusted for other lighting conditions.

For the range of different types of lighting within which the Auto White Balance Function can provide precise adjustment, refer to the chart **(→ 102)**. For recording under lighting conditions outside this range, the Auto White Balance Function does not work correctly, and the recorded picture has a red or blue cast. However, the same also applies, if the subject is lit by more than one light source, even if these light sources are within this range.



■ Colour Temperature

Every light source has its own colour temperature measured in Kelvin (K). The higher the Kelvin value, the more bluish the light; the lower the value, the more reddish the light. The Kelvin value is related to the tint of the light, but not directly to its brightness.
The range ① indicated in the illustration above shows the light sources for which this Movie Camera can provide precise white balance adjustment and, therefore, natural colours in the recorded pictures, when using the Full Auto Mode. For light sources outside this range, adjust the white balance manually **(→ 51)**. Also, additional lighting may be necessary.

① Control range of this Movie Camera's Auto White Balance Adjustment Mode

② Blue sky

③ Cloudy sky (Rain)

④ TV screen

⑤ Sunlight

⑥ White fluorescent lamp

⑦ 2 hours after sunrise or before sunset

⑧ 1 hour after sunrise or before sunset

⑨ Halogen light bulb

⑩ Incandescent light bulb

⑪ Sunrise or sunset

⑫ Candlelight

■ Progressive Photoshot Function

This function lets you record still pictures with higher resolution, finer details and smoother image contours than the normal Photoshot Function.

- Usually, still pictures recorded with single-CCD Movie Cameras are field still pictures, whose vertical resolution is approximately half of that of frame still pictures, and picture details are not very precise. (1 frame consists of 2 fields.)
- When recording moving objects, there is a slight difference between two fields. If these field still pictures are recorded as a frame still picture, it will have broken up image contours.
- To record still pictures with smooth contours in excellent picture quality, this Movie Camera is equipped with the Progressive Photoshot Mode featuring:
  an iris that closes like a shutter
  2 field memories
  Actual operation:
  - Pressing the [PHOTO SHOT] Button
  - Closing the iris instantaneously to prevent the next image from entering through the lens
  - Storing the same picture data in 2 field memories

As a result, the recorded frame is made up of two fields taken at exactly the same time, and the resolution is approximately 50% higher to ensure a picture with smooth contours.

Notes about the Progressive Photoshot Function
Pressing the [PHOTO SHOT] Button in the Progressive Photoshot Mode records a frame still picture.

However, when [PROGRESSIVE] on the [CAMERA SETUP] Sub-Menu is set to [ON], the following functions cannot be used:

- Digital Zoom
- Digital Effect Modes in [EFFECT1]
- Shutter speeds of 1/750 s or faster
- Continuous Photoshot (Also not possible when [PROGRESSIVE] is set to [AUTO].)

As still pictures recorded in the Progressive Photoshot Mode are extremely sharp and brilliant, they are highly suitable for printing on a Video Printer and for importing into a computer.

When you press the [PHOTO SHOT] Button in the Progressive Photoshot Mode, a click sound can be heard. This is caused by the closing of the iris and is not an indication of malfunction.

- During normal recording, the Progressive Photoshot Function cannot be used.

■ Time Code

Time Code signals are the data which indicates the time in hours, minutes, seconds and frames (25 frames/sec). Having this data included in the recording gives every single picture on the tape its own address.

- The Time Code is automatically recorded as part of the sub code with every recording you make.
- When you insert a new (previously unrecorded) cassette, the Time Code automatically starts from zero. If you insert a recorded cassette, the Time Code continues where the time code of the last previous scene stopped. (In this case, the zero indication [0h00m00s00f] may appear after inserting the cassette, but when the recording starts, the Time Code records from the previous value.)
- You cannot reset the Time Code to zero.
- In playback modes other than the Normal Playback Mode, the Time Code may not be displayed (or not be correct).
- Unless the Time Code is recorded continuously from the beginning of the tape, precise editing may not be possible. To ensure that the Time Code is recorded without interruption, we recommend that you use the Camera Search Function **(→ 33)** or Blank Search Function **(→ 34)** before starting to record a new scene.

■ Memory Stop Function

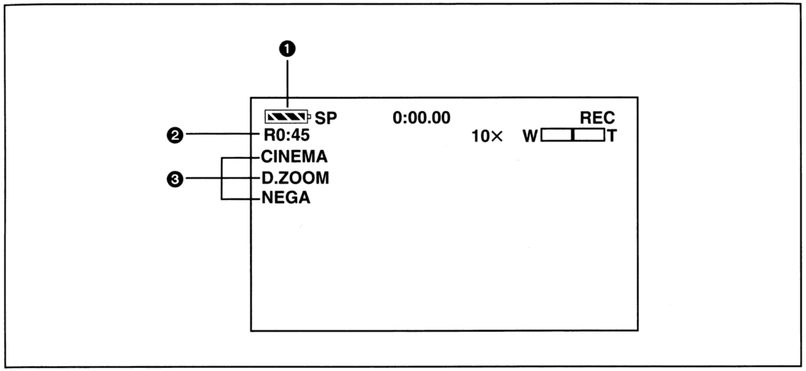
The Memory Stop Function is convenient for the following operations.

Rewinding or fast-forwarding the tape to a desired position

1. **Reset the Tape Counter to zero at the tape position from which you want to play back later. (→ 85)**
2. **Set [DISPLAY] on the [DISPLAY SETUP] Sub-Menu to [MEMORY].**
3. **Start playback or recording.**
4. After playback or recording is finished:
   Slide the [OFF/ON/MODE] Switch from the [ON] position to put the Movie Camera in the VCR Mode.
5. **Rewind the tape.**
   The tape automatically stops approximately at the position at which you reset the counter to zero.

Stopping the editing automatically in the audio dubbing

1. **Reset the Tape Counter to zero at the tape position at which you want the editing to stop.**
2. **Set [DISPLAY] on the [DISPLAY SETUP] Sub-Menu to [MEMORY].**
3. **Play back a still picture at the point at which you want the audio dubbing to start.**
4. **Start the audio dubbing. (→ 63)**
   The audio dubbing automatically stops approximately at the position at which you reset the counter to zero.



Indications on the LCD Monitor/in the Finder

❶ Remaining Battery Power
As the remaining battery power decreases, the indication changes as follows:
▮▮▮▮ → ▮▮▮ → ▮▮ → ▮ → ▯
When the battery is completely discharged, the ▮ (▯) Indication flashes.
(When you are using the AC Adaptor, the ▮▮▮▮ Indication may appear, however, this has no meaning in this case.)

❷ Remaining Tape Time
The remaining tape time is displayed in minutes. (When it becomes less than 3 minutes, the indication starts to flash.)

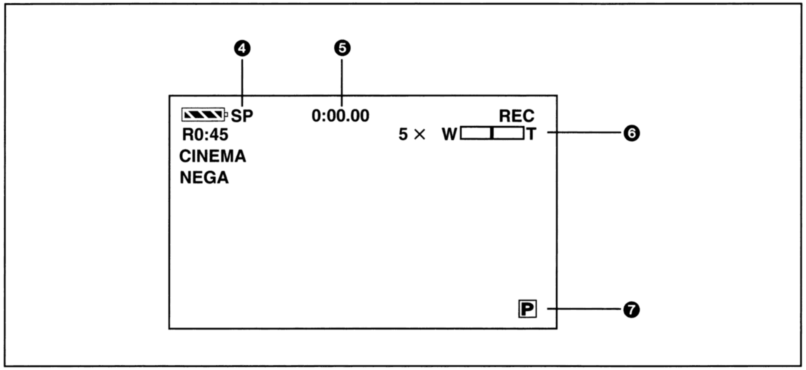
- If a recording lasts less than 15 seconds, the remaining tape time cannot be displayed correctly.
- The displayed remaining tape time may be shorter than the actual remaining tape time.

❸ Cinema Mode (→ 25)
When recording in the Cinema Mode, this indication is displayed.

Digital Zoom (→ 21)
When the Digital Zoom Function is activated, this indication is displayed.

Digital Effects (→ 41, 42)
When a digital effect is activated, the corresponding indication is displayed.

Playback Zoom (→ 62)
When the Playback Zoom Function is activated, this indication and the zoom magnification are displayed.



❹ Recording Speed Mode (→ 14)
The selected Recording Speed Mode is displayed.
SP: Standard Mode
LP: Long-play Mode

❺ Tape Counter, Time Code (→ 108)
The Tape Counter, Memory Stop Function or Time Code Indication is displayed.

❻ Zoom Magnification (→ 20, 21)
When you push the [W/T] Zoom Lever up or down, the Zoom Magnification Indication and the Zoom Gauge are displayed.

Recording Mode (→ 17, 39, 50, 51, 52, 53, 54)

AUTO:	This appears when the Mode Selector Switch is set to [AUTO].
MNL:	This appears when the Mode Selector Switch is set to [MNL].

Super Image Stabilizer (→ 26)

◙:	When the Super Image Stabilizer Function is activated, this indication is displayed.

Audio Recording Mode (→ 63)

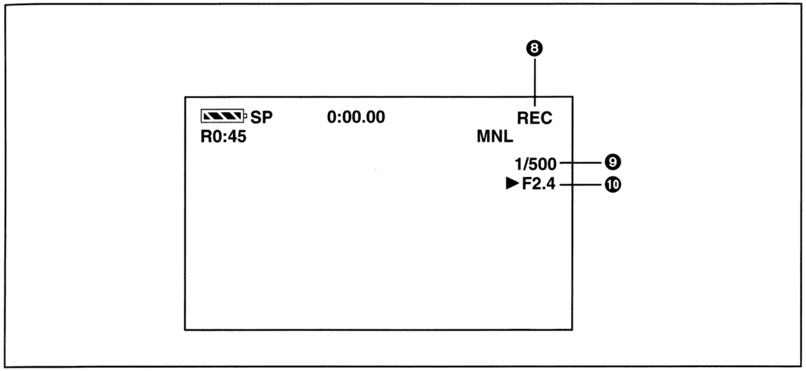
12 bit/16 bit:	The indication of the Audio Recording Mode that was selected for recording is displayed during playback.

Automatic Printing (→ 76)

AUTOPRINT:	This indication is displayed when the Auto Print Function is being used.

❼ Progressive Photoshot Mode (→ 23)

P:	This indication is displayed when the Progressive Mode is activated.



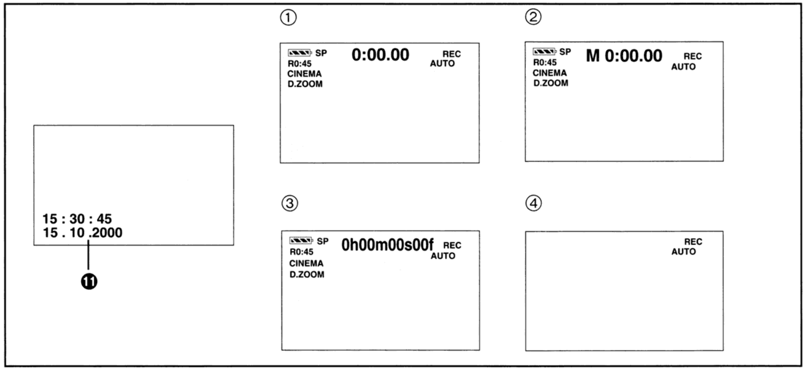
❽ Tape Run Indications

REC:	Recording **(→ 17)**
PAUSE:	Recording Pause **(→ 17)**
▷:	Playback **(→ 27)**/Camera Search in forward direction **(→ 33)**
◁:	Camera Search in reverse direction **(→ 33)**
❚❚:	Still Playback **(→ 30)**
▷▷:	Fast-forward/Cue Playback **(→ 28)**
◁◁:	Rewind/Review Playback **(→ 28)**
❚▷/◁❚:	Slow Playback in forward direction/ Slow Playback in reverse direction **(→ 29)**
❚❚▷/◁❚❚:	Still Advance Playback in forward direction/ Still Advance Playback in reverse direction **(→ 30)**
▷▷❚/❚◁◁:	Index Search in forward direction/ Index Search in reverse direction **(→ 36, 37)**
CHK:	Recording Check **(→ 18)**
A.DUB ▷:	Audio Dubbing **(→ 63)**
A.DUB ❚❚:	Audio Dubbing Pause **(→ 63)**
PHOTO:	Recording in the Photoshot Mode **(→ 22)**
BLANK:	Blank Search **(→ 34)**
R ▷:	Repeat Playback **(→ 27)**
2×▷▷:	Variable Speed Search **(→ 28)**

- When you record with the LCD Monitor facing forward using the Mirror Mode, none of the Tape Run Indications shown above appear. Only the Remaining Battery Power Indication, the Recording Indication [●] and the Recording Pause Indication [●❚❚] appear. If the [!] Indication appears, turn the LCD Monitor so that it faces backward and then confirm the displayed warning message(s).

❾ Shutter Speed
When you manually adjust the shutter speed, this indication is displayed. **(→ 53)**

❿ Iris Value (F Number)
When you manually adjust the iris, this indication is displayed. **(→ 54)**



⓫ Date and Time
The time is indicated in the 24-hour system.

Making the Date/Time Indication Appear (➜ 65)

This Movie Camera automatically records the date and time, however not directly in the picture but as part of the sub code **(➜ 98)**.
To make the Date/Time Indication appear, set [DATE/TIME] on the [DISPLAY SETUP] Sub-Menu to the desired setting.
It is also possible to make the Date/Time Indication appear and change it by repeatedly pressing the [DATE/TIME] Button on the Remote Controller.

Changing the Indications

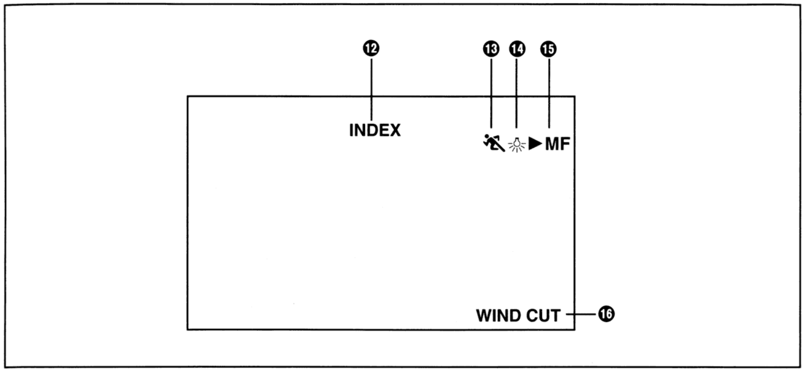
By changing the setting for [DISPLAY] on the [DISPLAY SETUP] Sub-Menu of the Main-Menu, the Counter Display Mode can be changed in the order shown in the above illustrations ①–④.

① Tape Counter Indication

② Tape Counter Indication with activated Memory Stop Indication

③ Time Code Indication

④ Simple Indication
(Only a few indications are displayed so that all parts of the picture can be seen clearly.)



⓬ Index (➜ 35)

INDEX:	The [INDEX] Indication flashes for a few seconds while an index signal is being recorded.

Search Number (➜ 37)

S 1:	The figure indicates which number of scene ahead from the present scene is to be played back.

⓭ Programme AE Mode (➜ 39)
The Programme AE Function offers the following settings:

🏃:	Sports Mode
👤:	Portrait Mode
🕯:	Low Light Mode
◙:	Spotlight Mode
⛷:	Surf & Snow Mode

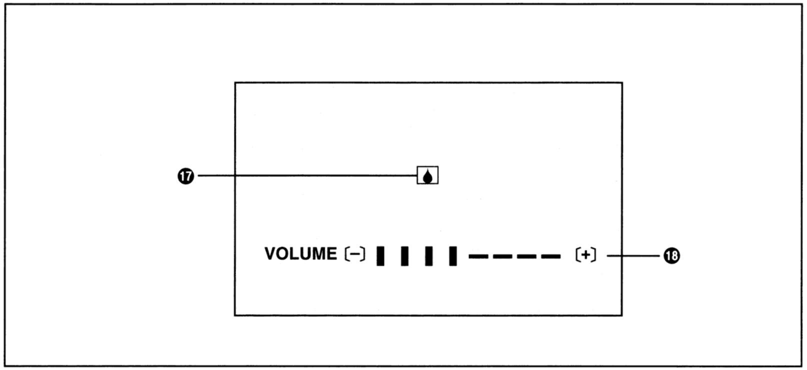
⓮ White Balance Mode (➜ 50)
The White Balance Mode offers the following possible settings:

☼:	Indoor Mode (recording under incandescent lamp)
☀:	Outdoor Mode
◪:	Last manually adjusted White Balance setting

When the Movie Camera is in the Auto Mode, none of the above 3 indications are displayed.

⓯ Manual Focus (➜ 52)
If you select the Manual Focus Mode, the [MF] Indication is displayed.
When the Movie Camera is in the Auto Mode, this indication is not displayed.

⓰ Wind Noise Reduction [WIND CUT]
If you set [WIND CUT] on the [OTHER FUNCTIONS] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu to [ON], the [WIND CUT] Indication is displayed.



⓱ Warning/Alarm
When any of the following indications lights or flashes, confirm the condition of the Movie Camera.

💧:	Condensation has occurred. **(➜ 93)**
📼:	The erasure prevention slider of the inserted cassette is open (set to [SAVE]). Audio dubbing was attempted on an unrecorded (blank) part of the tape. No cassette is inserted.
🔋:	The Battery is discharged. Charge it. **(➜ 11)**
⊗:	The built-in battery is discharged. **(➜ 89)**
⊗:	The video heads are dirty.
📼 END:	During recording, the tape has reached its end.
REMOTE:	Wrong Remote Controller Mode is selected. **(➜ 70)**
PRINTER ERROR:	The Video Printer is not connected correctly, or there is some trouble on the Video Printer.
UNPLAYABLE TAPE (OTHER FORMAT):	Playback was attempted on a part of a tape recorded in a different television system.
UNABLE TO A. DUB (LP RECORDED):	Audio dubbing is not possible because the original recording was made in the LP Mode.
INCOMPATIBLE TAPE:	The cassette is incompatible.

⓲ Sound Volume (➜ 27)
Use this indication to adjust the volume of the playback sound from the built-in speaker.
Slide the [OFF/ON/MODE] Switch from the [ON] position to put the Movie Camera in the VCR Mode and keep the [PUSH] Dial pressed until the [VOLUME] Indication appears.

INITIAL/LOGO		ABBREVIATIONS
A	A GND	Analogue GND
	A HASW	Audio Head Amp Switching Pulse
	A HSW	Audio Switching Pulse
	A MUTE	Audio Mute
	A ORP	Audio Overlap Pulse
	A. TR	Auto Tracking
	A0-8, 0-17	Memory Address
	A3V2	AD Converter Reference Voltage
	AB0-4	Address Bus
	AB0-4, AB12-15	Address Bus Line 0-4, 12-15
	ABSF	Focus Encoder Input
	ACI	Analogue Channel Cording IC
	AD	AD Converter
	AD	Auto Date, Analogue Digital Converter
	AD CLK	AD Clock
	AD REC	Audio Delayed REC
	AD0-6	Address
	AD0-6, ADR0-6	Address Data Line
	ADCLK	Analogue Digital Converter Clock
	ADCNT	Analogue Digital Control
	ADCS	Analogue Digital Chip Select
	A-DET	Audio Detect
	ADREC	Audio Delaied Rec
	ADUB	Audio Dubbing
	AE	Auto Expose
	AECNT	Auto Expose Control
	AEE(H)	Audio E-E (H)
	AEH	Audio Erase Head
	AEIRQ	Auto Expose Interrupt Request
	AF/MF	Auto Focus/Manual Focus
	AF DIS CS	AF DIS Chip Select
	A-FADE(L)	Audio Fade (L)
	AF-AMP	AF HALL Bias
	AFCS	Auto Focus Chip Select
	AFRP	Audio PLL Voltage Control
	AF-VN	Zoom Encoder V-Ref (–)
	AF-VP	Zoom Encoder VREF (+)
	AGC	Automatic Gain Control
	AGCCNT	Automatic Gain Control Control
	AGND	Analogue Ground/Audio Ground
	AGS	Anti Ground Shooting
	AH(P) / (R)	Audio Head (Play) / (Record)
	AHASW	Audio Head Amp Switch Pulse
	AHSW	Audio Head Switch Pulse
	AI, AO	Buffer Input, Output
	AIBCK	Bit Clock (to A/D Converter)
	AIDAT	Serial Data (to A/D Converter)
	AILRCK	L/R Clock (to A/D Converter)
	AIMCK	Master Clock (to A/D Converter)
	ALC CNT	Auto Level Control Control
	ALC MAIN	Auto Level Control Drive
	ALE	Address Latch Enable
	A-LOCK	Full Auto Switch
	A-MUT(H)	Audio Mute (H)
	ANLPTH	Analogue Loop Through High
	AORP	Audio Overlap Pulse
	APCNT	Aperture Control
	APS	Auto Power Save
	ART VH	Artifical Vertical Sync
	AT CNT	Automatic Tracking Gain Adjust
	ATF	Automatic Track Finding
	ATFCLK	41.85MHz Clock
	ATFG	Auto Track Gain
	ATL	Auto Lock Select
	ATN	Absolute Track Number
	ATR OFF(H)	Auto Tracking Off (H)
	ATV	Advanced TV
	AUDIO(N)	Audio (Normal)
	AUX	Auxiliary
	AVDD	Analogue VDD
	AVSS	Analogue Ground
	AWTB	Auto White Balance B-Y
	AWTR	Auto White Balance R-Y
B	BACK	Back-up
	BACK UP	Microcomputer Back-up
	BACK VDD	Back-up Power
	BATT	Battery
	BATT ALARM	Battery Alarm
	BATT REF	Reference Voltage for Battery
	BCB	B Carrier Balance
	BCBM(B-Y)	B-Y Carrier Balance
	BCBM(R-Y)	R-Y Carrier Balance
	BD0-7	REC/Play In/Out Buss
	BDCK	Standard Bus Data Clock (9MHz)
	BDEN	Standard Bus Data Enable
	BEND	Data Block End Request
	BF	Burst Flag Pulse
	BFA	Burst Flag Pulse for Encorder
	BFO/BFI	Burst Flug Input/Output
	BI, BO	Buffer Input, Output
	BL	Back Light
	BL ON	Back Light ON (L)
	BL4V	Back Light 4V
	BLC 0, 1	Back Light Y Control Out, In
	BLDI/O	Back Light Drive Input/Output
	BLK	Blanking Pulse
	BLKA	Blanking for Encorder
	BLKA	Blanking Pulse for Encorder
	BLKI/O	Blanking Pulse In/Out

INITIAL/LOGO		ABBREVIATIONS
	BLKZ	Blanking Pulse for Zoom Encorder
	BM	Balance Modulator
	BQUIET	Bus Out Control Signal
	BUF IN/OUT	Buffer In/Out
	B-Y KB	B-Y Carrier Balance
	B-YO	B-Y Signal Out
C	C A In/Out	Pre-Aperture In/Out
	CAPSTP	Capstan Stop Flag
	C CNT	Colour Control
	C SYNC	Composite Sync Signal
	C/N	Carrier/Noise
	C0-7, C00-07	Chrominance Signal 0-7
	CAGAIN	Aperture Gain Control
	CAM	Camera
	CAM CLK	Camera Clock
	CAM RST	Camera Reset
	CAM SIOC	Camera Serial In/Out Contol
	CAM T	Camera Test
	CAM TL	Capstan Trque Limit
	CAP EC	Capstan Trque Control
	CAP P(H)	Capstan Power On (H)
	CAP R/F/S	Capstan Reverse (H)/Stop (M)/Forward (L)
	CAP SW	Capstan Power Control Switch
	CAPSTP H	Capstan Stop Flag (Stop High)
	CAPVM	Capstan Motor Current
	CAPVS	Capstan Motor Power Control Switch
	CAS	Compresion, Audio Process, Shuffling/Deshuffling
	CAS	Memory Address Strobe (Active Low)
	CASDOWN, DWN	Cassette Down (L)
	CB, CR	Chroma B, Chroma R
	CBLK	Composite Blanking Pulse
	CC	Channel Cording
	CCA	Curent Drive Control
	CCA	Current Control Amp
	CCD	Charge Coupled Devise
	CCW	Counterclockwise
	CD SP0-7	Digital Chroma
	CDS	Correlate Double Sampling Signal
	CDS1, 2	Sampling Pulse for CCD Output Signal
	CE	Chip Enable
	CE	Control Pulse Erase
	CEC	Capstan Error Code
	C-ERA(H)	Control Erase (H)
	CFEM	Chrominance Memory Signal
	CFM	Chrominance Field Memory
	CFM1-4	Chroma Field Memory Signal
	CG CLK	Character Generator Clock
	CG CLK DATA	Clock Generator Data
	CG DATA	Character Generator Data
	CGC	Chrominance Gain Control
	CGCS	Character Generator Chip Select
	CGO	Character Generator Serial Data
	CH	Charge
	CH1	Channel 1 (Odd Field)
	CHR	Character
	CHR BACK	Character Back-up
	CHR MIX	Character Mix
	CI, CO	Buffer In/Out
	CI,CO	Buffer Input & Output
	CIF	Control Signal Forward Input
	CIF, CIR	Positive Control Pulse, Negative Control Pulse
	CIR	Control Signal Reverse Input
	CK	Clock
	CL/CLK	Clock
	CLASS	Classeffication Signal for Compress (DCT/VLC)
	CLASS 0.1	Class Control Signal Durring DCT/VLC
	CLK135	13.5MHz System Clock
	CLK18	18MHz System Clock
	CLK2	Clock 2 (824XFH: 12.875MHz)
	CLK246	24.576MHz Clock
	CLK27	27MHz System Clock
	CLK450	450KHz Clock
	CLKDCLK	Digital Clock
	CLK-PH	Clock Phase Control
	CLK-REF	Reference Clock
	CLP-RST-H	Clamp Reset High Signal
	CLX	TFT X-axis Transmission Clock
	CLX, CLX1-4	Shift Clock for X Direction (LCD Panel)
	CLY	Shift Clock for Y Direction (LCD Panel)
	CLY	TFT Y-axis Transmission Clock
	CLY FG	Cylinder FG Signal
	CMEMO0-3	Chroma Memory Output Signal 0-3
	CMIX	Character Mix
	CMO	Chrominance Memory Output
	COMPC	Position Detection Pulse
	COM RDY	Serial Enable Signal
	CMODE	Camera Mode
	CNCLK	Clock
	CNR	Chrominance Noise Reduction
	CNT, CONT	Control
	CO	Control Out
	CO0-7	Chrominance Output 0 to 7 (Digital)
	COM	Common
	COM RDY	Serial Transmission Enable
	COMB	Comb Filter
	COS EQ	Cosin Equalizer
	CP	Clamp Pulse
	CP ON(H)	Camera Power On(H)
	CP2, 20	Clamp Pulse
	CP2A, CP2O	Encoder Clamp Pulse
	CPN	Component Signal
	CPOB	Clamp Pulse for Optical Blanking
	CPS	Composite Signal
	CPV	Gate Scan Clock
	CR OUT	Pre Apature Out
	CR POW SW	Camera Remote Power On Switch
	CRA	Aperture Gain Control

INITIAL/LOGO		ABBREVIATIONS
	CRA	Pre Apature Gain Control
	CRST	Camera Reset
	CS	Chip Select
	CS 0-7	Chrominance Signal Out 0-7
	CSEL	Clock Phase Select
	CSI 0-7	Chrominance Signal In 0-7
	CTSW	Crosstalk Switch
	CURR	Current
	CW	Clockwise
	CYL EC	Cylinder Motor Trque Control
	CYL PG	Cylinder Motor PG
	CYL VM	Cylinder Motor Current or Power
D	D CLK	Digital Clock
	D MODE	Digital Mode Switch Signal
	D01-03	Zoom 01-03
	DA UV SEL	D/A Convertor U/V Select
	DAC	Digital Analogue Converter
	DAG	Digital Analogue Ground
	DB0-7	Data 0-7
	DB0-7	Microprocessor Data
	DCC	DC Clamp Control
	DCCNT	DC Control
	DCI	Digital Channel Cording IC
	DCLR	Digital Clear
	DCP	Digital Clamp Pulse
	DCS-CLK, DA	CAS & DV I/F Serial Clock
	DC-STP1	DCS Serial Start
	DC-STP2	DCS Serial Stop
	DCT	Discrete Cosine Transform (Compression)
	DCX7	Serial Data
	DEDP 0-3	Playback Data
	DEDR 0-3	Rec Data
	DEMO	Demodulation
	DEMP	A/D Convertor Empahsis Control
	DEMP	De-Emphasis
	DFD 0-7	Encode Data In/Out Between Shaffling Memory
	DFD0-7	Encode Input/Output Signal for Shuffling Memory
	DIBDCK	Bit Clock
	DICLK	Digital Clock
	DIDAT	Serial Data
	DIDAT	Serial Data Durring Digital Audio In
	DIF	Digital Interface
	DILRCK	L/R Clock
	DILRCK	Serial Clock Durring Digital Audio In
	DIMCK	Master Clock
	DIMCK	Mater Clock Durring Digital Audio In
	DIO 1-8	Data In/Out
	DIOS	Data In/Out Select Control Signal
	DIOS	Select Signal for Digital In/Out
	DIS	Digital Image Stabilizer
	DIS R/B	Digital Image Stabilizer Read (H)/Busy (L)
	DIS R/B	DIS IC Rady/Busy
	DIS/KAND	Digital Image Stabilizer/Sensitivity

INITIAL/LOGO		ABBREVIATIONS
	DISCS	Dis Chip Select
	DISP	Display
	DL	Delay Line
	DOBCK	Audio A/D Convertor Bit Clock
	DOCTL	Data Output Control Signal
	DODAT	Serial Data (to D/A Converter)
	DOLRCK	Audio A/D Converter LR Clock
	DOLRCK	L/R Clock (to D/A Converter)
	DOMCK	Audio A/D Converter Master Clock
	DOMCK	Master Clock (to D/A Converter)
	DQ 1-16	Memory Data
	DRAM CAS	D-RAM Colum Address Strobe
	DRAM OE	D-RAM Out Enable
	DRAM RAS	D-RAM Read Address Strobe
	DREC	AV Delayed REC Start Pulse
	DRK	Dark (LPF Switch for Auto Focus)
	DS1, 2	Double Sampling Pulse
	DSF 0-7	Data In/Out for Shaffling Memory
	DSF 0-7	Input/Output Data to Shuffling Memory (18MHz)
	DSP	Digital Signal Processor
	DSP R/B	DSP IC Rady/Busy
	DSP-48K-H	DSP IC Clock Select
	DSTB	Data Stobe Signal
	DSV	Digital Sum Variation
	DV	Digital Video
	DVB	Digital Video Broadcast
	DVC	Digital Video Cassette
	DVDD	Digital VDD
	DVIO	Digital Video Input Output
	DVSS	Digital Ground
	DX	Shift Data for X Direction (for LCD)
	DY	Shift Data for Y Direction (for LCD)
	DY	TFT Y-axis Shift Data
	DZ	Digital Zoom
E	E Snap	Electric Snap Shot
	E ZM	Electric Zoom
	E2 CS or E2P CS	EEPROM Chip Select
	E2 R/B	EEPROM Rady/Busy
	E2P	EEPROM
	EARP	Earphone
	EC	Torque Control
	ECC	Error Correction Cording
	ECM	Electric Condencer Mic
	ECR	Reference Voltage for Capstan Torque
	EDA	Error Correction, DCI, ATF Servo
	EE CS	EEPROM Chip Select
	EE R/B	EEPROM Read (H)/Busy (L)
	EEPROM	Electric Erasable Programable Read Only Memory
	EIS	Electric Image Stabilizer (DIS)
	EMP	A/D Convertor Emphasis Control
	ENAB	Enable
	ENV	Enverope
	EOB	End of Block

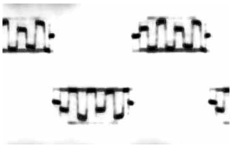
INITIAL/LOGO		ABBREVIATIONS
	EQ	Equalizer
	EVF	Electric View Finder
	EXT DC	External DC (AC Adaptor)
	EXT DC(H)	AC Adaptor DC (H)
	EXT NOREG	AC Adaptor 6V
	EXT S DATA	Serial Data for Edit
	EXT SCK	Serial Clock for Edit
	EZOOM	Electric Zoom
F		
	F ENC	Lens F-Value
	FACT MODE	Factry Mode (not used in the service)
	FB	Feed Back
	FC	Saw Tooth Signal In
	FCK	Clock
	FCO	Saw Tooth Signal Generator
	FENC	Focus Encoder
	FEND	Frame End Pulse
	FH2B	FH/2 (15.625KHz / 2=7.8125KHz)
	FIX OSD	Auto Tracking Off (H)
	FLICK	Flicker Output
	FM	Field Memory
	FM0-7	Field Memory 0-7
	FMCO0-3	Field Memory Chrominance Out 0-4
	FMDIR	Focus Motor Direction
	FMOEM	Field Memory Enable
	FMOEO	Field Memory Enable
	FMT1-4	Focus Motor Terminal 1-4
	FMY00-07	Field Memory Luminance Out 0-7
	FMYI0-07	Field Memory Luminance In 0-7
	FNO	F Value
	FPS	Frame Refference Signal
	FR	Capstan Reverse High
	FRP	Frame Refference Pulse
	FRPSO	Frame Start Pulse
G	G1, G2, G3	Gap 1, 2 and 3
	GCA	Gain Control AMP
	GCNT	Gain Control
	G-CNT	AGC Adjustment
	GCTRL	Gain Control
	GENE	Generator
	GF	FG AMP Terminal
	GSW	Ground for Switching Power
H	H/M/N	Hi-Fi / Mix / Normal
	H/N	Hi-Fi / Normal
	H1, 2	H. CCD Drive Pulse
	HAP	Horizontal Aperture
	HASW	Head AMP Switching Pulse
	HB	Hall Bias
	HBR SET	High Brightness Set
	HBRST	High Brightness Set
	HCLR	High Clear
	HCP	Shift Clock for Horizontal Drive
	HD	Horizontal Drive Pulse
	HDTV	High Definition TV
	HEX	Hexadecimal
	HG	Hall Gain
	HID	Head Switching Pulse
	HLT	High Bright Signal
	HALL IN(+), (–)	Input Signal from Hall IC
	HP	Headphone
	HPF	High Pass Filter
	HSE	Modulated Data Output
	HSP	Timing Pulse for Shaffling Memory
	HSS	Horizontal Sync Signal
	HSW	Head Switching Pulse
	HS-WT	High Speed Zoom
	HSZ	High Speed Zoom
I	I/F	Interface
	I-2 C	Inter Integrated Circuit
	ID(H)	Wide Television (H)
	IMP	Inter Microprocessor Protocol
	INF	CCD Input Signal 1
	INF	Input Frame Signal
	INS	CCD Input SIgnal 2
	INTER	Interval Recording
	INV	Inverter
	IOU	R-Y Analogue Signal Output
	IOV	B-Y Analogue Signal Output
	IOY	Y Analogue Signal Output
	IR	Infrared Rays
	IRDET	Imfrared Ray Detection
	IREF	Current Adjustment Terminal
	IRIS/SH	Iris / Shutter Control
	IRQ	Interrupt Request
	ITI	Insert & Track Information
J	JPEG	Joint Photographic Image Cording Experts Group
K	KANDO	Digital Gain Up
	KB	Carrier Balance
	KEY IN	Key Scan
	KND	Digital Gain Up
	KNEE	Luminance Compensate
L	LCD	Liquid Crystal Display
	LCD P(L)	LCD Power On (L)
	LD	Load Pulse
	LDD	Liquid Direct Drive
	LEDCNT	LED Control
	LI-BATT	Lithium Battery
	LOAD	Loading
	LOAD F, R	Loading Direction (F: Forward / R: Reverse)
	LPF	Low Pass Filter
	LRMONO	Monoral Audio (L + R)
	LSB	Least Significant Bit

INITIAL/LOGO		ABBREVIATIONS
	LVL	LPF Switch for Auto Focus
M	M1-3	Motor Coil Terminal 1 to 3
	MA0-5	Microprocessor Address Data 0-5
	Mbps	Megahertz Bit Per Second
	MD	Modulation
	MD0-7	Microprocessor Data 0-7
	MDT0-7	Microprocessor Data 0-7
	ME (TAPE)	Metal Evaporated (Tape)
	MENB	Focus Motor Enable
	MFF	Manual Focus Far
	MFN	Manual Focus Near
	MHSYNC	Monitor Horizontal Sync Signal
	MIC	Memory In Cassette
	MIG	Meta In Gap
	MIX N.R.D.	Non Rec Data Mix
	MOD	Modulation
	MOUT	Mic Out
	MP (TAPE)	Metal Particle (Tape)
	MPEG	Moving Picture Image Cording Experts Group
	MPEG2	Moving Picture Image Cording Experts Group Phase 2
	MRST	Focus Motor Reset
	MSB	Most Signal Bit
	MVSYNC	Monitor Vertical Sync Signal
N	N/F	Near/Far Focus
	N/P	NTSC/PAL
	NB1-3	Base for NPN Transistor
	NC	No Connection
	NC1-3	Corrector of NPN Transistor
	NCLR	Power On Reset
	NCP1	Clamp Pulse
	NCP2+VDH	Clamp Pulse + Horizontal Drive Pulse
	NCP2+VDM	Clamp Pulse + Gate Pulse
	NDE	Non Liner De-Emphasis
	NE	Emitor of NPN Transistor
	NLE	Non Liner Emphasis
	NR	Noise Reduction
	NRD	Non Rec Data
	NRD BLK	Non Rec Data Blanking
	NRD CLK	No Rec Data Clock
	NRE	Read Enable Input (Low Active)
	NWE	Write Enable (Low Active)
O	OB	Optical Black
	OBCNT	Optical Black Control
	OBREF	Reference Voltage for Optical Black Control
	OE	Output Enable
	OFH	Horizontal Counted Down Clock Signal (Reference)
	OFS	Offset
	OP	Operation AMP Output
	OSD	ON Screen Display
	OVL	Overlap Pulse
	OZ	Optical Zoom
P	P SW	Power Switch
	PB1-3	PNP Base 1-3
	PBCTL	Play Back Control
	PBCTL	Pre-Branking Control
	PBH	Head Amp Switch
	PBLK	Pre-Blanking (Pulse)
	PC1-3	Corrector of PNP Transistor
	PCBM	Carrier Balance
	PCH	Phase Compensator (Hall AMP)
	PCI	Phase Compensator (Current)
	PCO	Phase Compensator Out
	PCS	Switching Power Control
	PCV	Phase Compensator (Voltage)
	PE	Emitter of PNP Transistor
	PED	Pedestal
	PEDECNT	Pedestal Control
	PENO	Alarm (L)
	PFP	Pilot Frame Position
	PGA, B	Power Ground A, B
	PGC	Pulse Generator Comparator
	PGI	Pulse Generator Input
	PGMM	Pulse Generator Monostable Multivibrator
	PGO	Output of Pulse Generator AMP
	PMODE	Select Signal for Normal / Wide Screen
	PON	Power On
	POR	Power On Reset
	POSCOM	Common Position
	PREAMP	Pre-AMP
	PREBLK	Pre-Blanking
	PT	Protect for V Voltage
	PWM	Pulse Width Modulation
	PWMB	Pulse Width Modulation Pulse
Q	Q2H	Source Output Select
R	R CTL P	Recorded Control Pulse (+)
	R CTL R	Recorded Control Pulse (–)
	R/B	Read/Busy
	R/L	Direction Control for Data Transmition
	RA	Recording AMP
	RA1	Rec AMP 1
	RAC AC	Rec Audio Current
	RAD	Read Address Data
	RAE	Read Address Enable
	RB	Read Busy
	R-B	R Bias
	RCB	R Carrier Balance
	RE	Read Enable
	RE(F), (S)	Rotary Erase Head Transformer
	REB	R Bias
	REC CC	Rec Current Control
	REC CCNT	Rec Current Control
	RECCTRL	Recording Control Pulse
	RECI	Rec Amp Switch

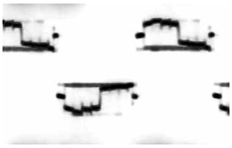
INITIAL/LOGO		ABBREVIATIONS
	RENCF	Lens Control (Forward)
	RENCR	Lens Control (Reverse)
	RERASE	Rotary Erase Head
	RGBIV1-2	1V Inverted Signal 1-2
	RGO R/G OFF	Offset Voltage for AWT R
	RSF	Capstan Direction (Reverse / Stop / Forward)
	RST	Reset
	RSTB	R Strobe
	RSTPWD	Reset Power Down Input
	RSTR	Reset Read
	RSTW	Reset Write
	RT	Saw Tooth Terminal
	RVCO	Resister for Oscillation
	RW	Read Write
	RWAE	Read Write Enable
S	S PHOT	Supply Photo Transistor
	S/H	Sampling Hold
	S/S	Start/Stop
	SBD	Serial Data
	SBI	Serial Data Input
	SBO	Serial Data Output
	SBT	Serial Clock
	SCAN0-5	Key Scan 0-5
	SCK	Serial Clock
	SCR	Search
	SCR, S.C.R.	Still Cue Review
	SEG.	Segment
	SET	White Balance Set
	SH/IRIS	Shutter/Iris Control
	SHIFT	Capasitor for Phase Shift
	SI	Serial Data Input
	SIC	Shift In Clock Input
	SIOC	Serial In/Out Control
	SMCE	Shaffling Memory Chip Enable
	SMRS	Shaffling Memory Read Strobe
	SMWE	Shaffling Memory Write Enable
	SMWS	Shaffling Memory Read Strobe
	SNAP	Snap Shot
	SNS LED	Sensor LED
	SO	Serial Data Output
	SPA	ATF Smapling Pulse
	SPEN	8 Bit Shift Register Enable
	SPK	Speaker
	SPO	Reset for Switcing Power
	SPST	8 Bit Shift Register Strobe
	SREELP	Supply Reel Pulse
	SRT	Start
	SSA	Start Sync block Area
	SSW	Select Signal for Low Pass Filter
	ST5V	Safety Tab 5V
	STAB	Safety Tab Switch
	STB	Stand by Signal
	STB	Strobe
	SWB	Switching Pre-Drive Pulse
	SYL EC	Cylinder Torque Control
	SYL FG	Cylinder FG
T	T PHOT	Take-up Photo Transistor
	TBC	Time Base Conntrol
	TFT	Thim Film Transistor
	TH	Thermostat for Battery
	TI	Test Mode Select
	TL	Torque Limit
	TM	Sub Code
	TMD	Sub Code Data
	TRE	Tracking Error Signal
	TREEL(P)	Take-up Reel (Pulse)
	TRFIX	Tracking Fix
	TRIWAVE	Tracking Wave
	TRP	Tracking Position
	TRP	Trap
	TSR	Head Switching Refference
	TST	Time Scale Transfer
U	U/V SEL	R-Y/B-Y Select Signal
	UNLOAD	Un-Loading
	UNRE	Microprocessor Read Enable
	UNWE	Microprocessor Write Enable
	UV	R-Y/B-Y
	UV SEL	R-Y/B-Y Select Signal
V	V1-V4	V. CCD Drive Pulse
	VB	VH Filter Switching
	VCE	Power Terminal
	VCNTL	Video Control
	VCO	Voltage Control Oscillator
	VCP	Shift Clock Output for Vertical Drive
	VCTLD	Video Control
	VCTRL	Voltage Charge Control
	VD	Vertical Drive Pulse
	VDDX	X Drive Power for Colour LCD
	VDDXY	XY Drive Power for Colour LCD
	VDDY	Y Drive Power for Colour LCD
	VDREC	Video Delayed Rec
	Vgg	Voltage for Gate IC
	Vgl	Gate off Voltage
	VID	Video Signal Out
	VIN	Video In
	VITC	Vertical Interval Time Code
	VITERBI	One of Signal Detection Method
	VL	Low Voltage
	VLC	Variable Length Cording
	VLOCKP	Artificial Sync Pulse
	VLP	Artificial Sync Pulse
	VM	Motor Voltage
	VMD	Velocity Mode Data
	VMD1-3	Electric Shutter Mode

INITIAL/LOGO		ABBREVIATIONS
	VMODE	NTSC/PAL Select Switch
	VMVH	VH Filter Switching
	VORP	Video Overlap
	VRB	Voltage Refference Bottom
	VRBS	Voltage Refference Bottom Output
	VREF1R3V	Refference Voltage 1.3V
	VREF3R3V	Refference Voltage 3.3V
	VREFH	Refference Voltage High Side
	VREFL	Refference Voltage Low Side
	VRI	Refference Voltage Input
	VRO	Refference Voltage Output
	VRT	Voltage Refference Top
	VRTS	Voltage Refference Top Output
	VS	Switching Comparator
	VSS	Vertical Sync Signal
	VSSX	X Driver Power for Colour LCD
	VSSXY	X-Y Driver Power for Colour LCD
W	W/N	Mode Select for Window Mode
	W/N	Wide / Normal
	WAD	Write Address Enable
	WAE	Write Address Enable
	WAERAE	Write Address Enable
	WARI	Interrupt
	WB	White Balance
	WE	Write Enable
	WEM	Memory Write Enable
	WHD	Wide Horizontal Drive Pulse
	WIDE A	Wide Zoom
	WSB	B AGC Control
	WSR	R AGC Control
	WTV	Wide TV
X	XP	FG Logic Reset
Y	Y FM0-7	Y Field Memory 0-7
	YCE	Cylinder Error Code
	YGC	Y Gain Control
	YMO 0-7	Y Field Memory 0-7
	YNCST	Noize Canceller
	YNR	Luminance Noise Reduction
	YSDP 0-7	Digital Y Out 0-7
Z	Z.ENC	Zoom Encoder
	Z.MIC	Zoom Mic
	ZENC	Zoom Encoder Output
	ZMDIR	Zoom Drive
	ZMEN	Zoom Enable
	ZMT	Zoom Motor Tele Side
	ZMT (+)/(–)	Zoom Motor (+)/(–)
	ZMTER	Zoom Motor Tele Side
	ZMW	Zoom Motor Wide Side
	ZSW	Zoom Switch

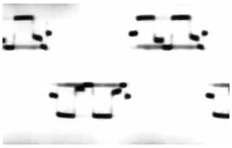
INITIAL/LOGO		ABBREVIATIONS



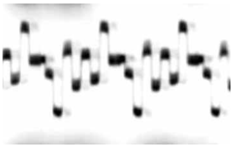
IC901-40 STOP
10.8 Vp-p (20 sec./div.)
COLOUR BAR



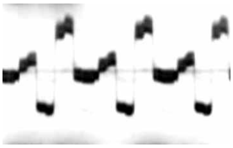
IC901-43 STOP
10.8 Vp-p (20 sec./div.)
COLOUR BAR



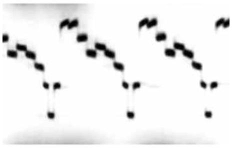
IC901-45 STOP
10.8 Vp-p (20 sec./div.)
COLOUR BAR



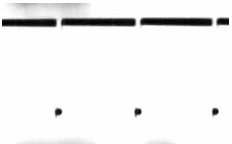
IC901-53 STOP
3.0 Vp-p (20 sec./div.)
COLOUR BAR



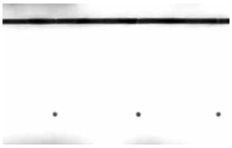
IC901-54 STOP
2.8 Vp-p (20 sec./div.)
COLOUR BAR



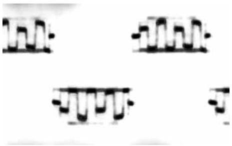
IC901-59 STOP
5.0 Vp-p (20 sec./div.)
COLOUR BAR



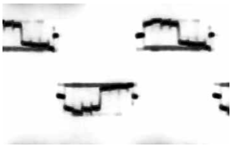
IC901-61 STOP
7.0 Vp-p (20 sec./div.)
COLOUR BAR



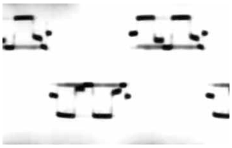
IC901-62 STOP
3.0 Vp-p (5msec./div.)
COLOUR BAR



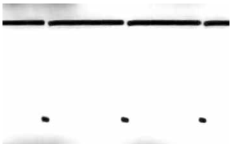
FP801-13 STOP
8.0 Vp-p (20 sec./div.)
COLOUR BAR



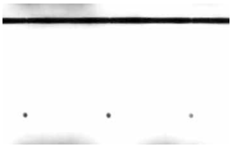
FP801-14 STOP
8.0 Vp-p (20 sec./div.)
COLOUR BAR



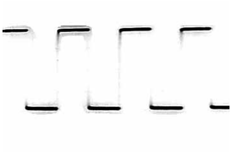
FP801-15 STOP
8.0 Vp-p (20 sec./div.)
COLOUR BAR



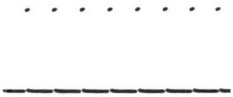
IC802-43 STOP
2.8 Vp-p (20 sec./div.)
COLOUR BAR



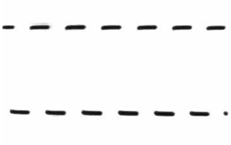
IC802-45 STOP
2.8 Vp-p (5msec./div.)
COLOUR BAR



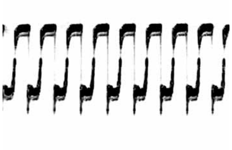
IC2201-58 REC/PLAY
2.8 Vp-p (0.2msec./div.)



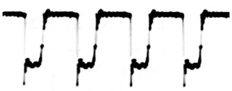
IC2201-56 REC/PLAY
2.2 Vp-p (5msec./div.)



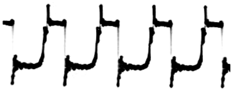
IC2201-55 REC/PLAY
2.8 Vp-p (1msec./div.)



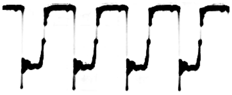
IC1001-4 STOP
1.0 Vp-p (1 sec./div.)



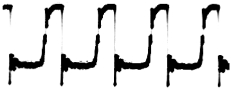
IC1001-46 STOP
1.2 Vp-p (0.5 sec./div.)



IC1001-56 STOP
1.4 Vp-p (0.5 sec./div.)



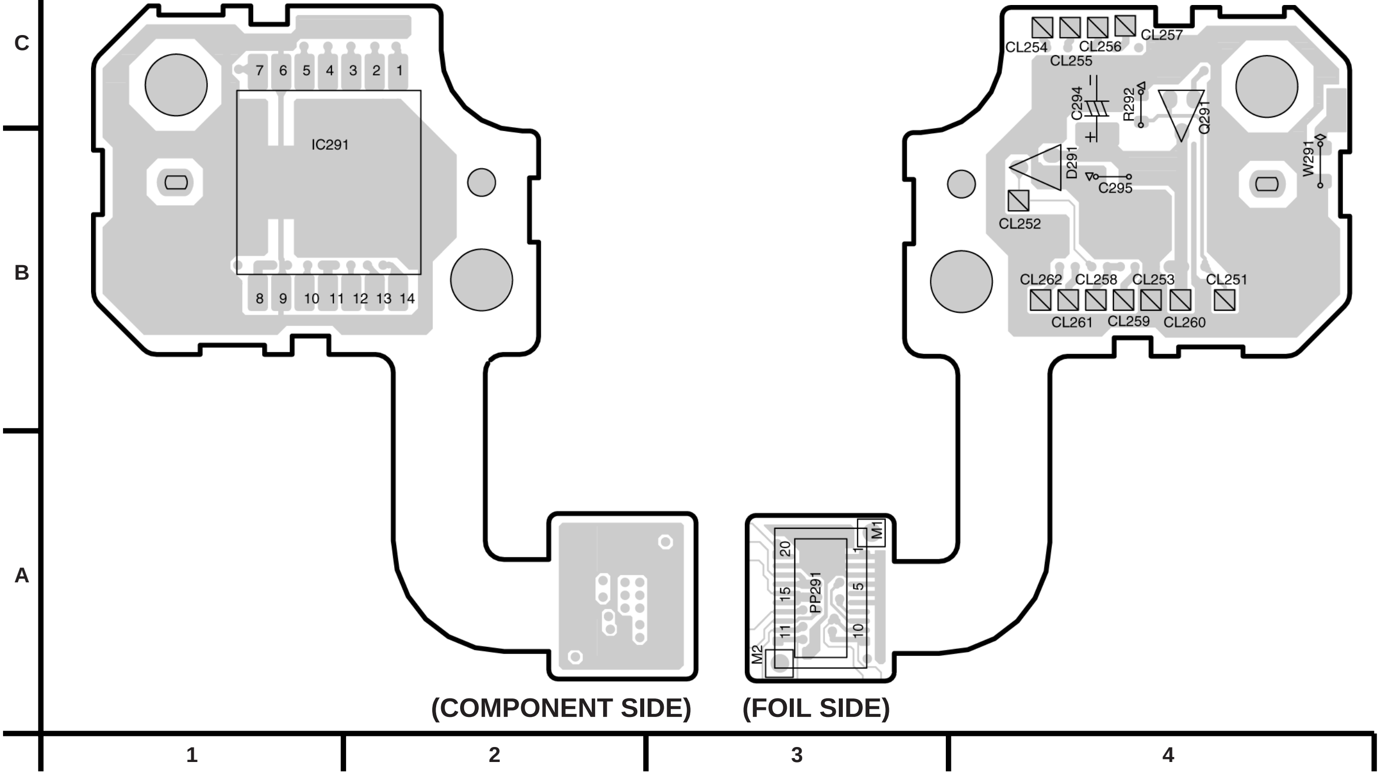
IC1001-57 STOP
1.0 Vp-p (0.5 sec./div.)



IC1001-64 STOP
1.0 Vp-p (0.5 sec./div.)

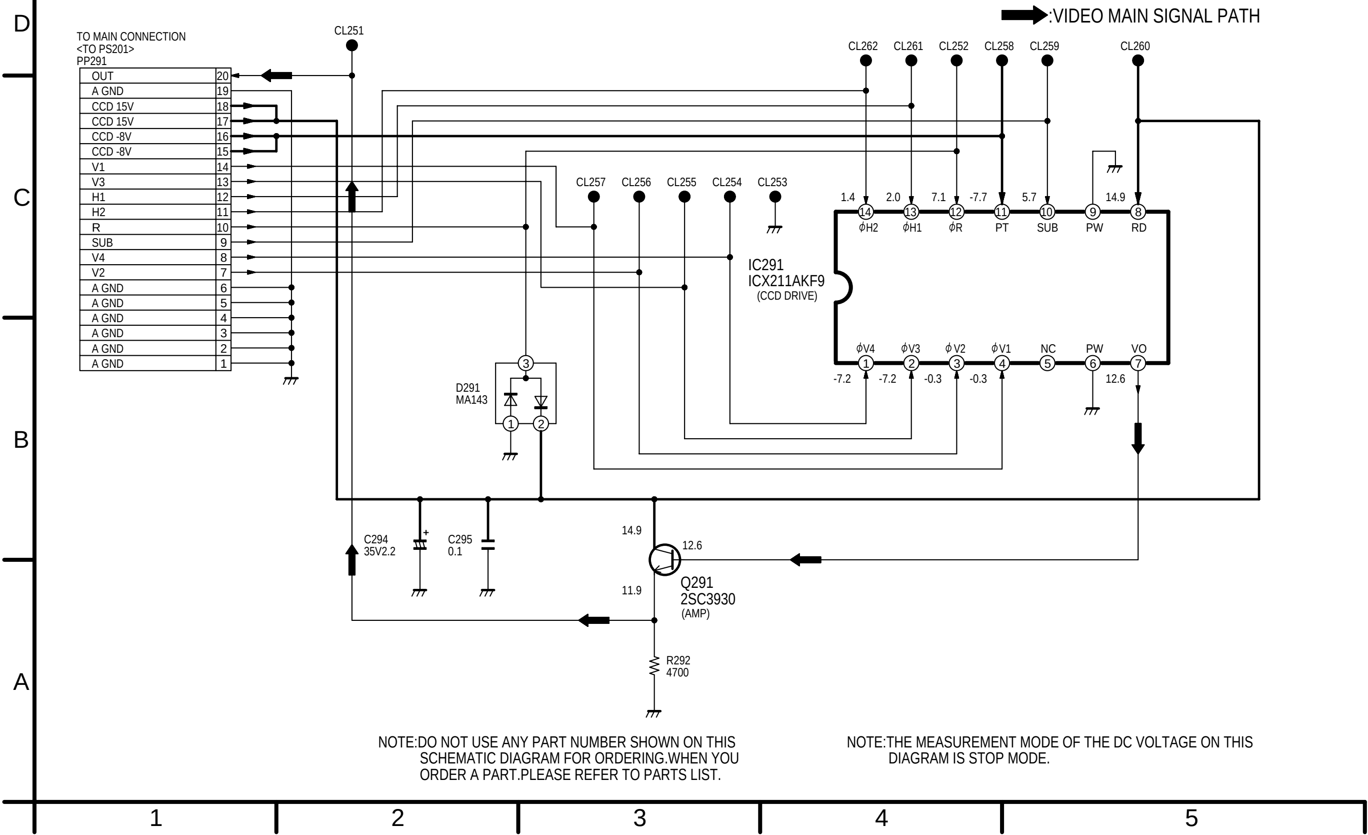
NOTE:MULTILAYER C.B.A.

THIS C.B.A. IS Multi-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT-PATTERNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.


C
B
A
1
2
3
4
7
6
5
4
3
2
1
IC291
8
9
10
11
12
13
14
CL254
CL255
CL256
CL257
C294
R292
Q291
D291
C295
W291
CL252
CL262
CL258
CL253
CL251
CL261
CL259
CL260
M1
M2
20
1
15
5
11
10
PP291

(COMPONENT SIDE)

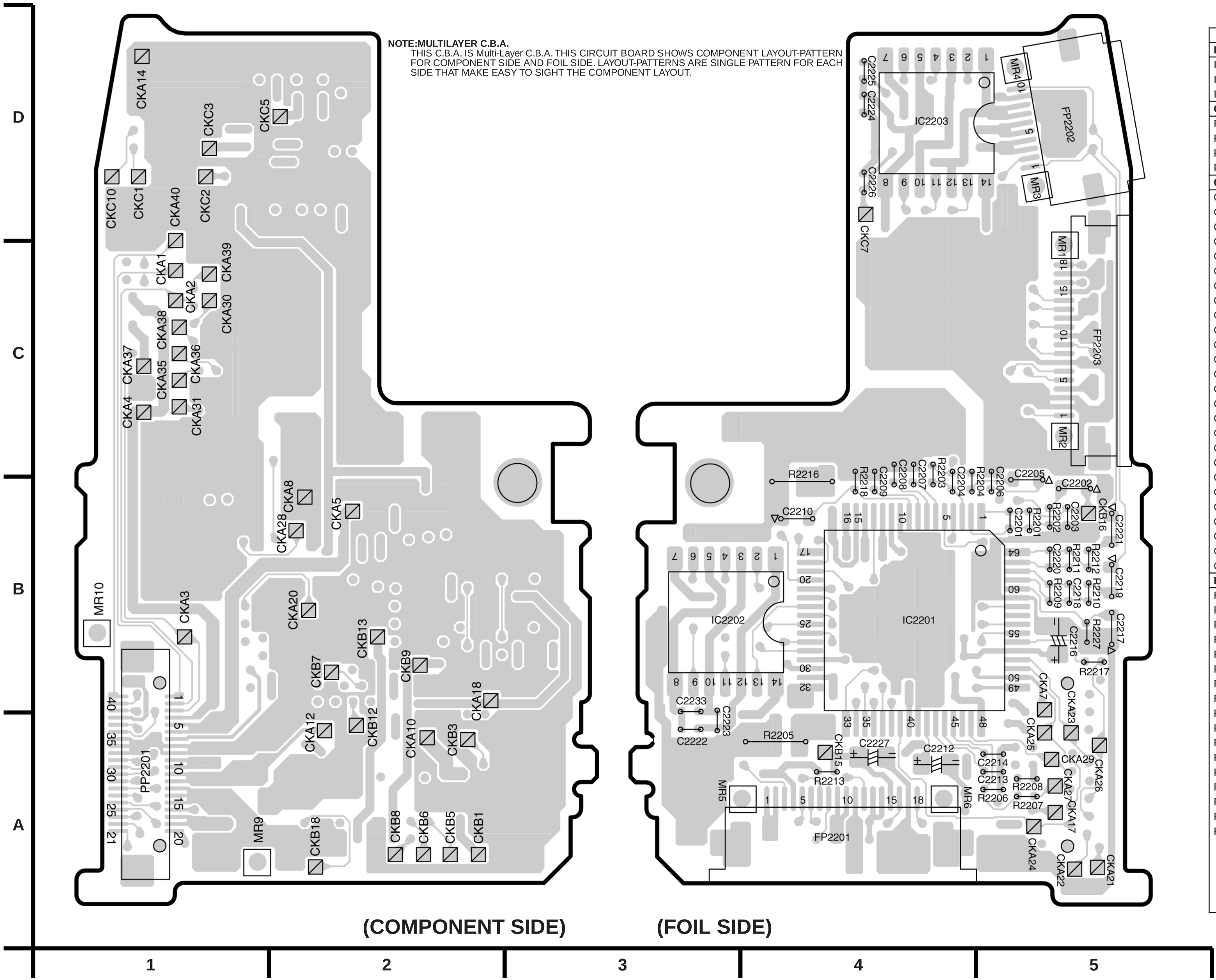
(FOIL SIDE)


:VIDEO MAIN SIGNAL PATH
TO MAIN CONNECTION
<TO PS201>
PP291
OUT 20
A GND 19
CCD 15V 18
CCD 15V 17
CCD -8V 16
CCD -8V 15
V1 14
V3 13
H1 12
H2 11
R 10
SUB 9
V4 8
V2 7
A GND 6
A GND 5
A GND 4
A GND 3
A GND 2
A GND 1
CL251
CL262
CL261
CL252
CL258
CL259
CL260
CL257
CL256
CL255
CL254
CL253
1.4
2.0
7.1
-7.7
5.7
14.9
ϕH2
ϕH1
ϕR
PT
SUB
PW
RD
IC291
ICX211AKF9
(CCD DRIVE)
ϕV4
ϕV3
ϕ V2
ϕV1
NC
PW
VO
-7.2
-7.2
-0.3
-0.3
12.6
D291
MA143
C294
35V2.2
C295
0.1
14.9
12.6
11.9
Q291
2SC3930
(AMP)
R292
4700
D
C
B
A
1
2
3
4
5

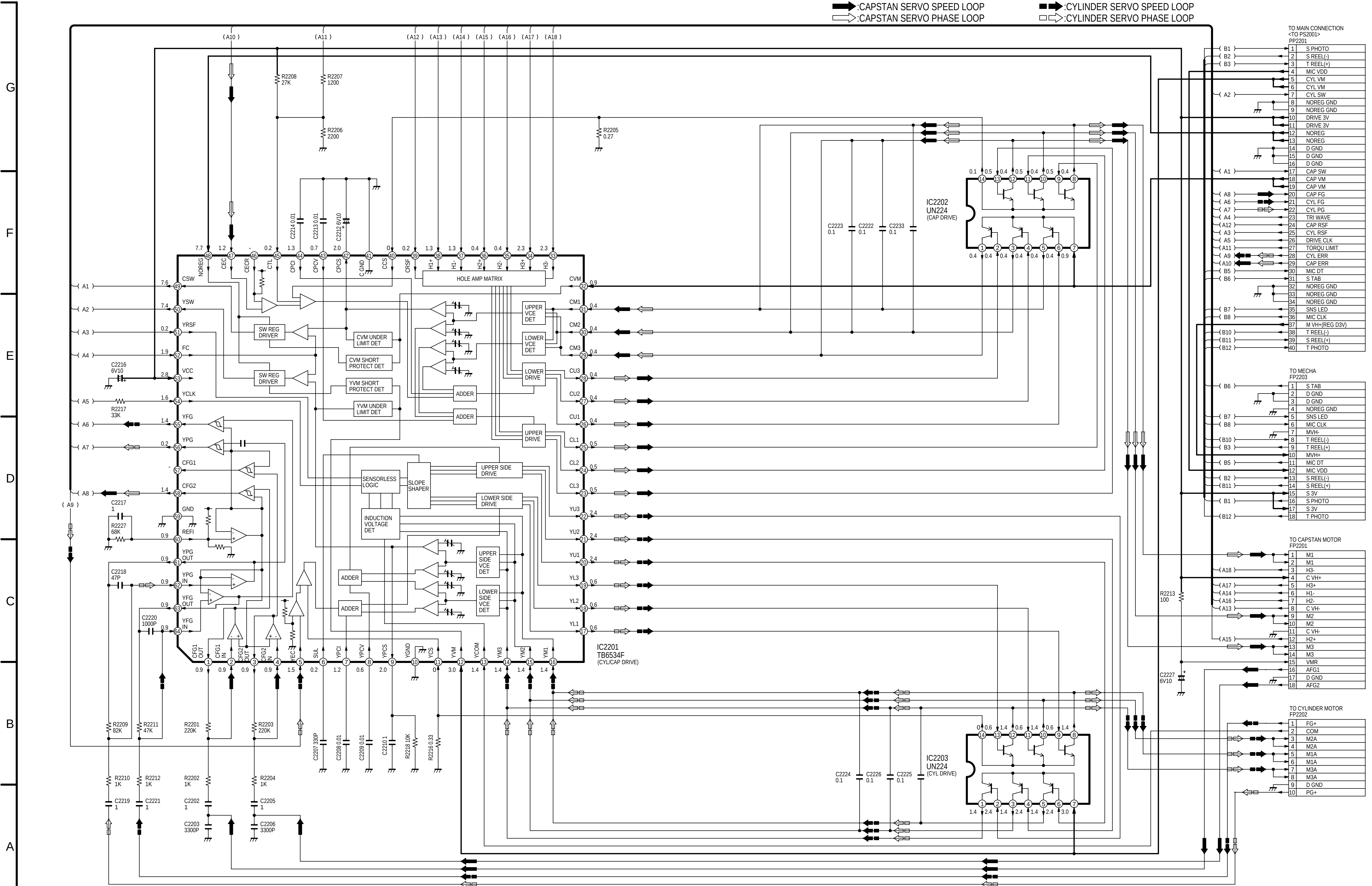
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART.PLEASE REFER TO PARTS LIST.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:MULTILAYER C.B.A.
THIS C.B.A. IS Multi-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT-PATTERNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.


D
C
B
A
1
2
3
4
5
(COMPONENT SIDE)
(FOIL SIDE)
CKA14
CKC10
CKC1
CKC3
CKC2
CKC5
CKA40
CKA1
CKA2
CKA39
CKA30
CKA38
CKA37
CKA35
CKA36
CKA4
CKA31
CKA8
CKA28
CKA5
MR10
CKA3
CKA20
CKB13
CKB7
CKB9
CKA18
CKA12
CKB12
CKA10
CKB3
PP2201
MR9
CKB18
CKB8
CKB6
CKB5
CKB1
C2225
C2224
IC2203
C2226
CKC7
MR4
FP2202
MR3
MR1
FP2203
MR2
R2216
R2218
C2209
C2208
C2207
R2203
C2204
R2204
C2206
C2205
C2202
C2210
C2201
R2201
R2202
C2203
CKB16
C2221
IC2202
IC2201
C2220
R2211
R2212
C2219
R2209
C2218
R2210
C2216
R2227
C2217
R2217
CKA7
CKA23
C2233
C2223
C2222
R2205
CKB15
C2227
C2212
C2214
C2213
R2213
R2208
R2206
R2207
CKA25
CKA29
CKA26
CKA27
CKA17
MR5
MR6
FP2201
CKA24
CKA22
CKA21

Drive C.B.A.	
Integrated Circuit	
IC2201	B4
IC2202	B3
IC2203	D4
Connector	
FP2201	A4
FP2202	D5
FP2203	D5
PP2201	A1
Capacitor	
C2201	B-5
C2202	B-5
C2203	B-5
C2204	B-4
C2205	B-5
C2206	B-5
C2207	B-4
C2208	B-4
C2209	B-4
C2210	B-4
C2212	A-4
C2213	A-5
C2214	A-5
C2216	B-5
C2217	B-5
C2218	B-5
C2219	B-5
C2220	B-5
C2221	B-5
C2222	A-3
C2223	A-3
C2224	D-4
C2225	D-4
C2226	D-4
C2227	A-4
C2233	B-3
Resistor	
R2201	B-5
R2202	B-5
R2203	B-4
R2204	B-5
R2205	A-4
R2206	A-5
R2207	A-5
R2208	A-5
R2209	B-5
R2210	B-5
R2211	B-5
R2212	B-5
R2213	A-4
R2216	B-4
R2217	B-5
R2218	B-4
R2227	B-5


■➡:CAPSTAN SERVO SPEED LOOP
⇨:CAPSTAN SERVO PHASE LOOP
■■➡:CYLINDER SERVO SPEED LOOP
□⇨:CYLINDER SERVO PHASE LOOP
G
F
E
D
C
B
A
IC2201
TB6534F
(CYL/CAP DRIVE)
IC2202
UN224
(CAP DRIVE)
IC2203
UN224
(CYL DRIVE)
HOLE AMP MATRIX
SW REG DRIVER
CVM UNDER LIMIT DET
CVM SHORT PROTECT DET
YVM SHORT PROTECT DET
YVM UNDER LIMIT DET
UPPER VCE DET
LOWER VCE DET
LOWER DRIVE
UPPER DRIVE
ADDER
SENSORLESS LOGIC
SLOPE SHAPER
UPPER SIDE DRIVE
LOWER SIDE DRIVE
INDUCTION VOLTAGE DET
UPPER SIDE VCE DET
LOWER SIDE VCE DET
CSW
YSW
YRSF
FC
VCC
YCLK
YFG
YPG
CFG1
CFG2
GND
REFI
YPG OUT
YPG IN
YFG OUT
YFG IN
NOREG
CEC
CECR
CTL
CPCI
CPCV
CPCS
C GND
CCS
CRSF
H1+
H1-
H2+
H2-
H3+
H3-
CVM
CM1
CM2
CM3
CU3
CU2
CU1
CL1
CL2
CL3
YU3
YU2
YU1
YL3
YL2
YL1
CFG1 OUT
CFG1 IN
CFG2 OUT
CFG2 IN
YEC
SUL
YPCI
YPCV
YPCS
YGND
YCS
YVM
YCOM
YM3
YM2
YM1
R2208 27K
R2207 1200
R2206 2200
R2205 0.27
C2214 0.01
C2213 0.01
C2212 6V10
C2216 6V10
R2217 33K
C2217 1
R2227 68K
C2218 47P
C2220 1000P
C2223 0.1
C2222 0.1
C2233 0.1
R2209 82K
R2211 47K
R2201 220K
R2203 220K
C2207 330P
C2208 0.01
C2209 0.01
C2210 1
R2218 10K
R2216 0.33
R2210 1K
R2212 1K
R2202 1K
R2204 1K
C2219 1
C2221 1
C2202 1
C2205 1
C2203 3300P
C2206 3300P
C2224 0.1
C2226 0.1
C2225 0.1
R2213 100
C2227 6V10
TO MAIN CONNECTION
<TO PS2001>
PP2201
1 S PHOTO
2 S REEL(-)
3 T REEL(+)
4 MIC VDD
5 CYL VM
6 CYL VM
7 CYL SW
8 NOREG GND
9 NOREG GND
10 DRIVE 3V
11 DRIVE 3V
12 NOREG
13 NOREG
14 D GND
15 D GND
16 D GND
17 CAP SW
18 CAP VM
19 CAP VM
20 CAP FG
21 CYL FG
22 CYL PG
23 TRI WAVE
24 CAP RSF
25 CYL RSF
26 DRIVE CLK
27 TORQU LIMIT
28 CYL ERR
29 CAP ERR
30 MIC DT
31 S TAB
32 NOREG GND
33 NOREG GND
34 NOREG GND
35 SNS LED
36 MIC CLK
37 M VH+(REG D3V)
38 T REEL(-)
39 S REEL(+)
40 T PHOTO
TO MECHA
FP2203
1 S TAB
2 D GND
3 D GND
4 NOREG GND
5 SNS LED
6 MIC CLK
7 MVH-
8 T REEL(-)
9 T REEL(+)
10 MVH+
11 MIC DT
12 MIC VDD
13 S REEL(-)
14 S REEL(+)
15 S 3V
16 S PHOTO
17 S 3V
18 T PHOTO
TO CAPSTAN MOTOR
FP2201
1 M1
2 M1
3 H3-
4 C VH+
5 H3+
6 H1-
7 H2-
8 C VH-
9 M2
10 M2
11 C VH-
12 H2+
13 M3
14 M3
15 VMR
16 AFG1
17 D GND
18 AFG2
TO CYLINDER MOTOR
FP2202
1 FG+
2 COM
3 M2A
4 M2A
5 M1A
6 M1A
7 M3A
8 M3A
9 D GND
10 PG+
(A1)
(A2)
(A3)
(A4)
(A5)
(A6)
(A7)
(A8)
(A9)
(A10)
(A11)
(A12)
(A13)
(A14)
(A15)
(A16)
(A17)
(A18)
(B1)
(B2)
(B3)
(B5)
(B6)
(B7)
(B8)
(B10)
(B11)
(B12)

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE.
THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE.(SP MODE)

1 2 3 4 5 6 7 8 9 10 11

Service Manual

TOP NEXT

ORDER NO. VMD0109026C8

Service Manual

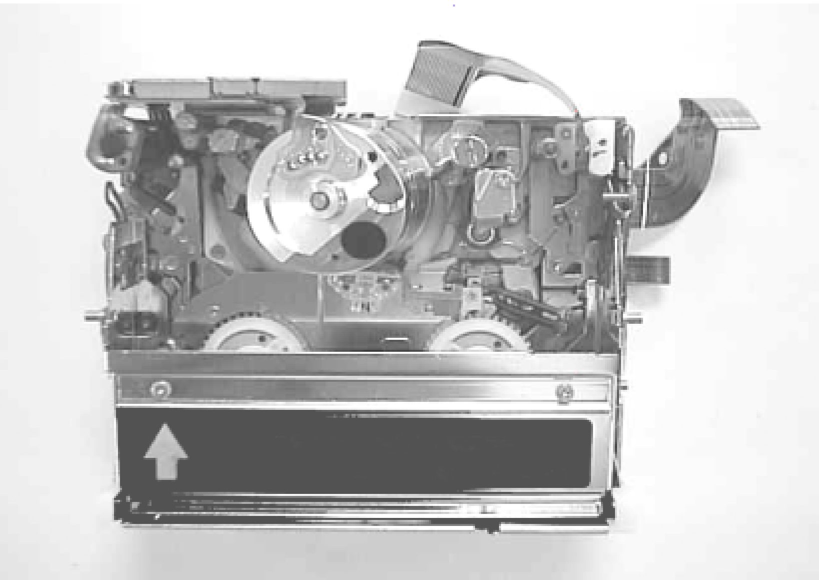
Digital Video Camera/Recorder

Panasonic Mini DV

- Q-MECHANISM

(Including Q1, Q2&Q3)

Disassembly/Assembly Procedures
Adjustment Procedures



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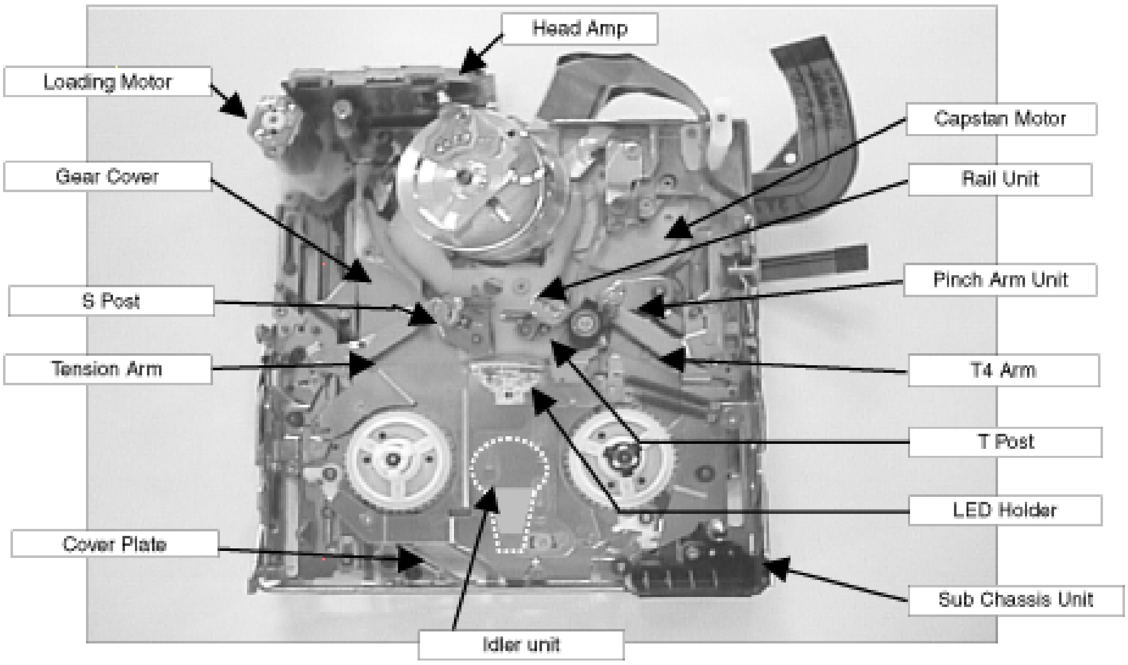
Panasonic

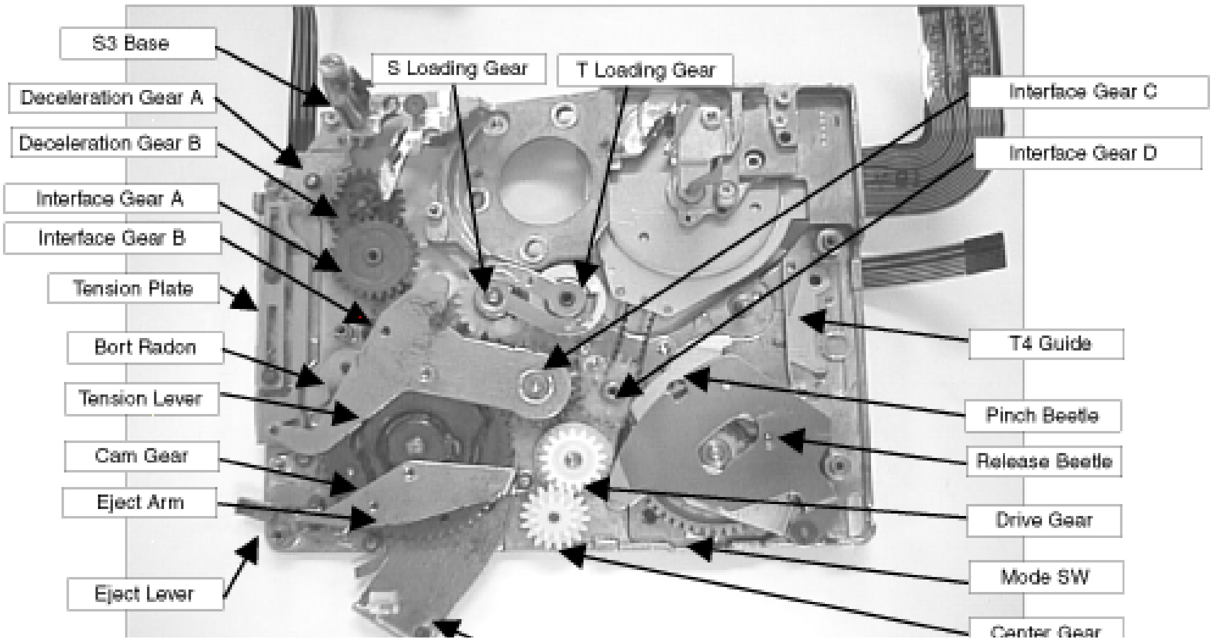
1.1 UPPER SIDE

TOP PREVIOUS NEXT

After taking out of Garage unit


Head Amp
Loading Motor
Gear Cover
S Post
Tension Arm
Cover Plate
Idler unit
Capstan Motor
Rail Unit
Pinch Arm Unit
T4 Arm
T Post
LED Holder
Sub Chassis Unit

After taking out of Sub Chassis Unit , Cylinder Unit , Gear Cover & Rail Unit

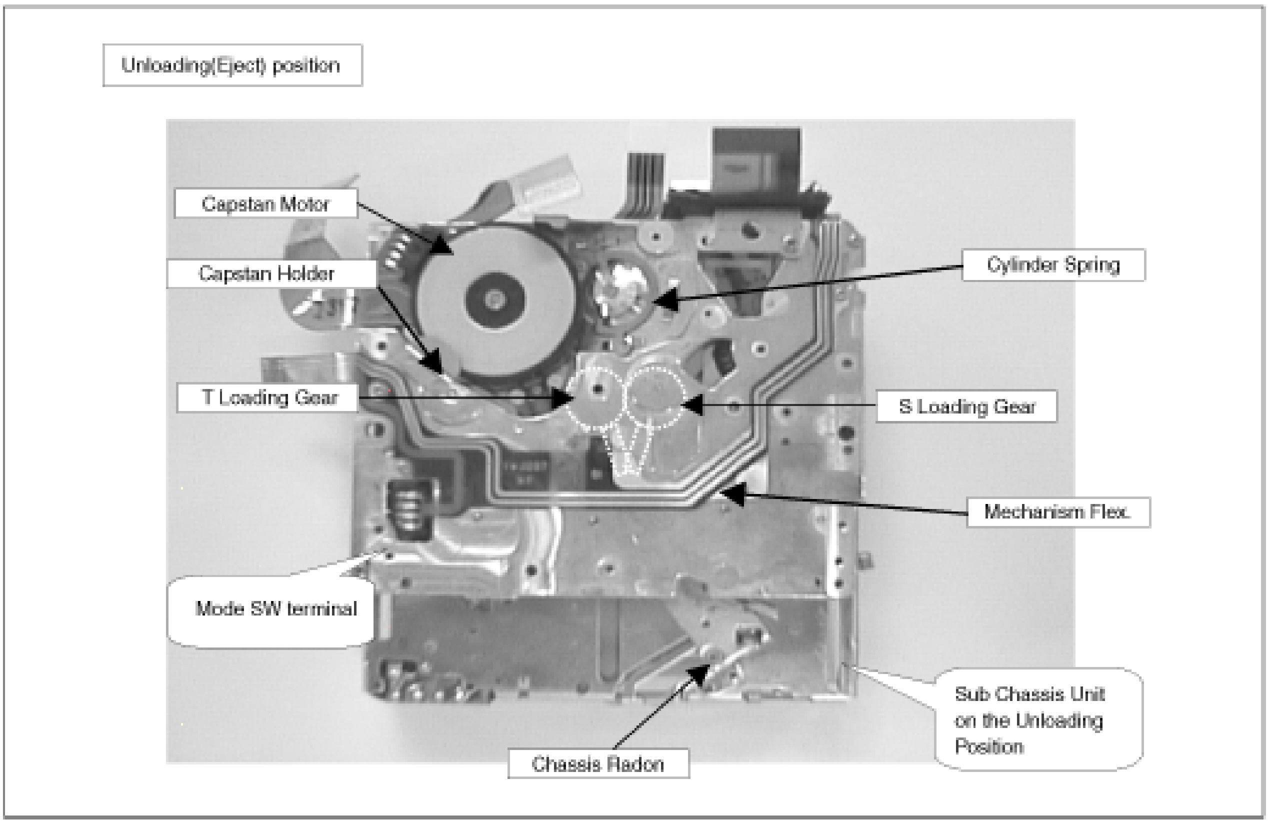

S3 Base
Deceleration Gear A
Deceleration Gear B
Interface Gear A
Interface Gear B
Tension Plate
Bort Radon
Tension Lever
Cam Gear
Eject Arm
Eject Lever
S Loading Gear
T Loading Gear
Interface Gear C
Interface Gear D
T4 Guide
Pinch Beetle
Release Beetle
Drive Gear
Mode SW
Center Gear

Mode SW
Eject Lever
Center Gear
Chassis Radon

TOP PREVIOUS NEXT

1.2 BOTTOM SIDE

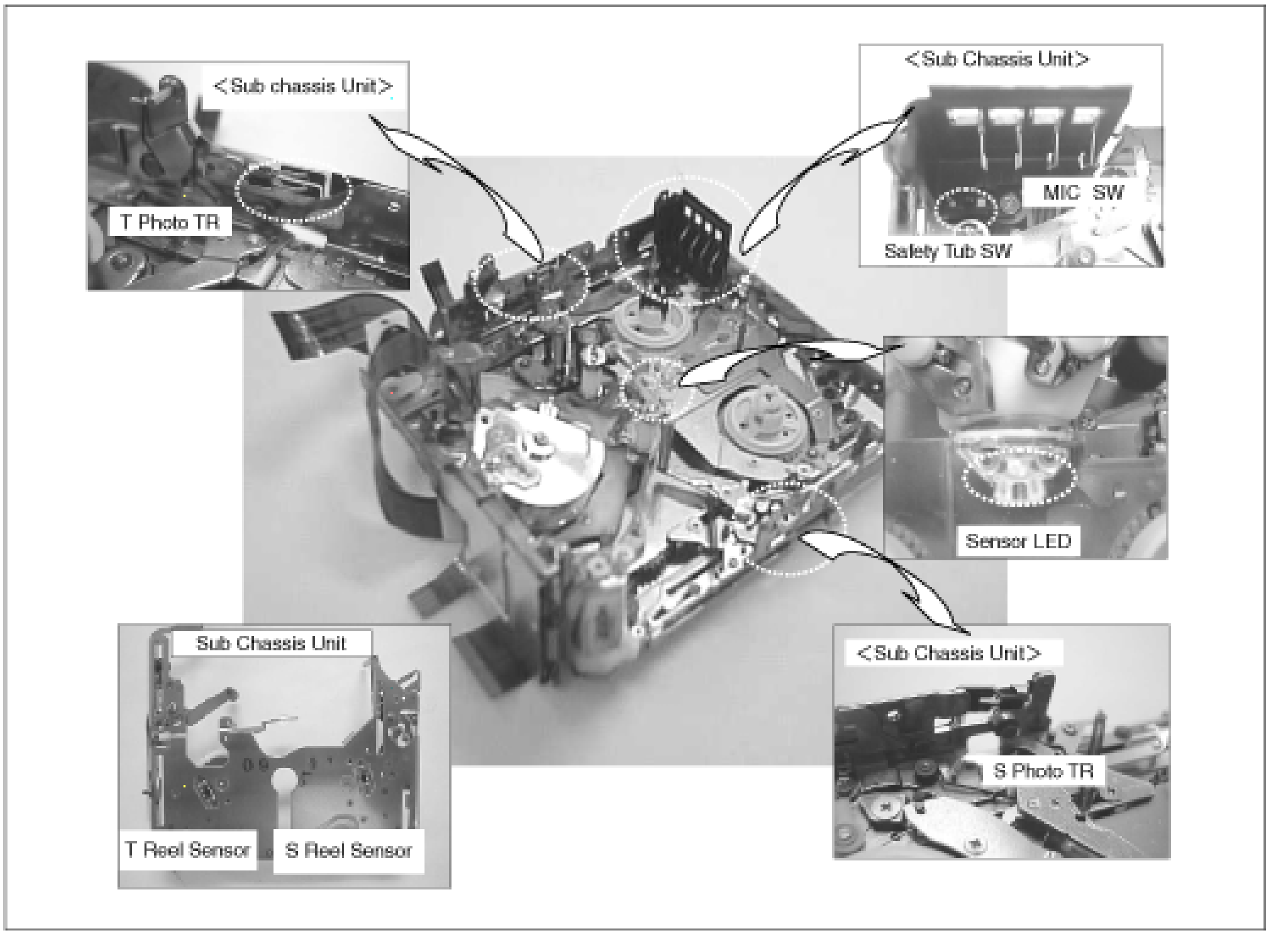
TOP PREVIOUS NEXT


Unloading(Eject) position
Capstan Motor
Capstan Holder
T Loading Gear
Mode SW terminal
Cylinder Spring
S Loading Gear
Mechanism Flex.
Sub Chassis Unit on the Unloading Position
Chassis Radon

TOP PREVIOUS NEXT

1.3 SENSOR POSITION

TOP PREVIOUS NEXT

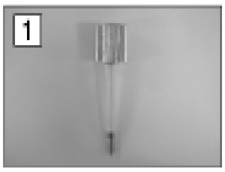

<Sub chassis Unit>
T Photo TR
<Sub Chassis Unit>
MIC SW
Safety Tub SW
Sensor LED
Sub Chassis Unit
T Reel Sensor
S Reel Sensor
<Sub Chassis Unit>
S Photo TR

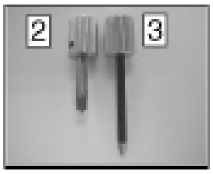
TOP PREVIOUS NEXT

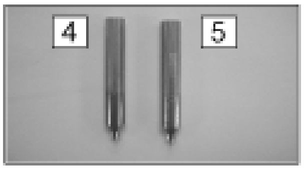
2.1 FIXTURES& TOOLS FOR DISASSEMBLY& ASSEMBLY

TOP PREVIOUS NEXT

No.	Parts number	Parts Name	Q′ty	New	Remarks
1	VFK1390	Precision Driver	1	•	
2	VFK1444	Gear Driver	1	•	
3	VFK1444Q2	Gear Driver for Q2 & Q3mecha.	1	•	
4	VFK1650	Cut Washer Jig(0.86)	1	•	
5	VFK1649	Cut Washer Jig(0.65)	1	•	
6	VFK1024	Molytone Grease	1	•	





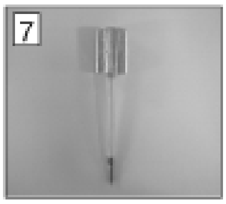


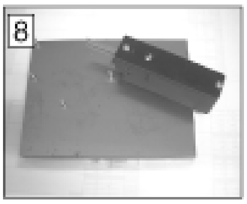
TOP PREVIOUS NEXT

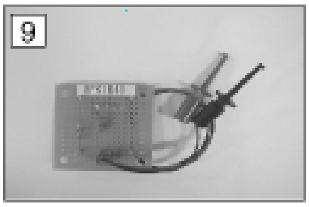
2.2 FIXTURES&TOOLS FOR MECHANICAL ADJUSTMENT

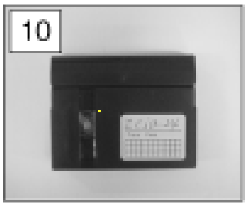
TOP PREVIOUS NEXT

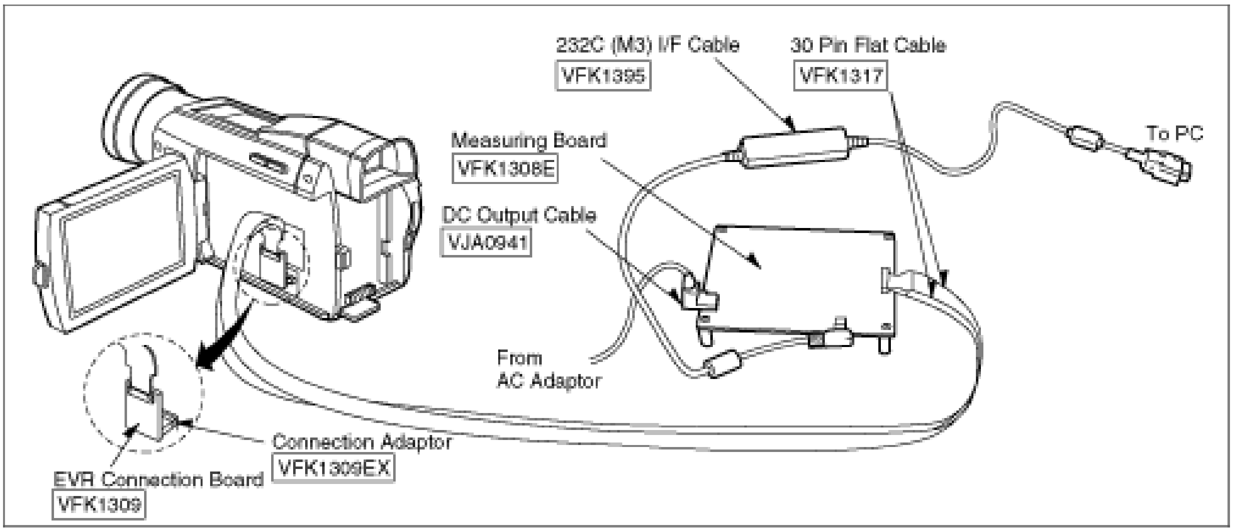
No.	Parts number	Parts Name	Q′ty	New	Remarks
7	VFK1278	Post Adjustment Driver	1	•	
8	VFK1638	Capstan Tilt Adj. Jig	1	•	
9	VFK1641	Envelope Detecor Board	1	•	
10	VFM3110EDS(PAL)	DV Alignment Tape	1	--	or VFM3010EDS(NTSC)
11	VFK1395	232C(M3) I/F Cable	1	--	"TATSUJIN" system
12	VFK1308E	Measuring Board	1	--	"TATSUJIN" system
13	VFK1309	EVR Connecor Board	1	--	"TATSUJIN" system
14	VFK1309EX	Connection Adaptor		--	"TATSUJIN" system
15	VFK1317	30pin Flat Cable	2	--	or VFK1517(New - 300mm) "TATSUJIN" system
16	VJA0941	DC Output Cable	1	--	"TATSUJIN" system










232C (M3) I/F Cable
VFK1395
30 Pin Flat Cable
VFK1317
To PC
Measuring Board
VFK1308E
DC Output Cable
VJA0941
From
AC Adaptor
Connection Adaptor
VFK1309EX
EVR Connection Board
VFK1309

2.3 MAINTENANCE FOR CAPSTAN TILT ADJUSTMENT JIG.

TOP PREVIOUS NEXT

1. Keep applying oil for preventive oxidation on base block.

   Glove should be used when you apply oil.

2. Do not apply pressure to this jig.

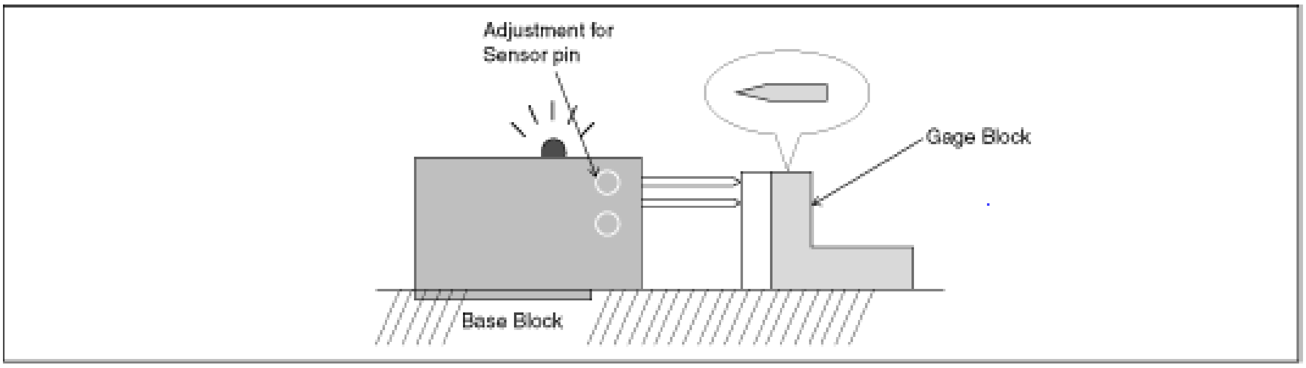
3. If Brightness of LED become weak, Battery (SUM4 X 2) in the top of box should be changed.

4. Inspect sensor pin regularly as following.

   A. Put Gage Block to sensor pin.

   B. Confirm LED is lit.

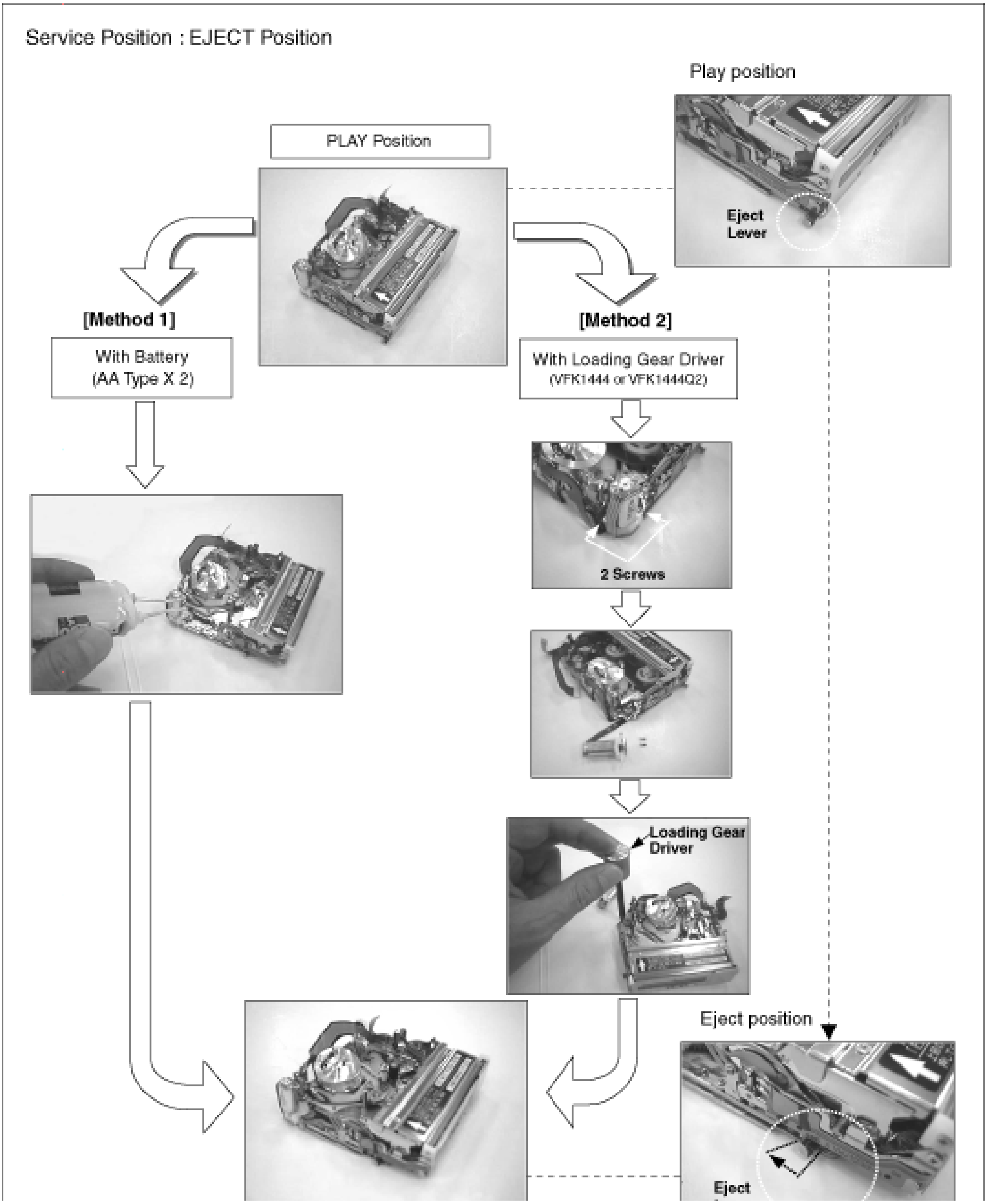
      If not, adjust sensor pin by rotating a screw.

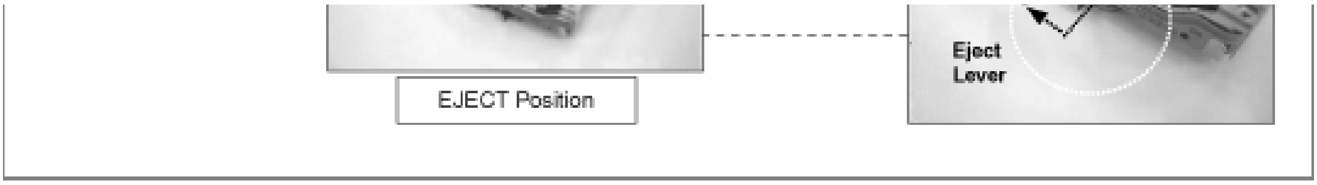


TOP PREVIOUS NEXT

3.1 PREPARATION FOR DISASSEMBLY

TOP PREVIOUS NEXT


Service Position : EJECT Position
Play position
PLAY Position
Eject
Lever
[Method 1]
With Battery
(AA Type X 2)
[Method 2]
With Loading Gear Driver
(VFK1444 or VFK1444Q2)
2 Screws
Loading Gear
Driver
Eject position
Eject


EJECT Position
Eject
Lever

TOP PREVIOUS NEXT

3.2 DISASSEMBLY PROCEDURE

TOP PREVIOUS NEXT

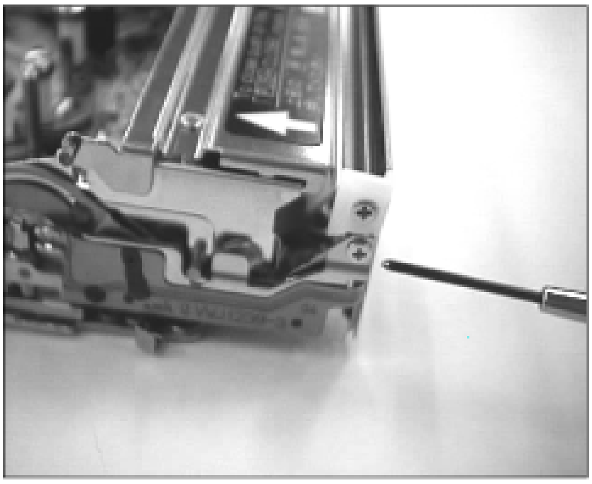
No.	Item	Fig.	Procedure
1	Cassette Up Unit.	Fig. D1-1	1) Remove 3 screws. (Q1 &2 have 4 screws)
		Fig. D1-2	2) Take coupling portion off from both S &T sides.
*2	H Amp Unit./(Only Q1 & Q2)	Fig. D2-1	1) Remove a screw from Shield case.
		Fig. D2-2	2) Take Cylinder Flex. From connector.
		Fig. D2-3	3) Remove a screw from H Amp Angle.
3	Cylinder Unit & RT Flex. Flame.	Fig. D3-1	1) Remove a screw from RT Flex. Flame.
		Fig. D3-2	2) Remove 3 screws and then take Cylinder Spring out.
		Fig. D3-3	3) Remove a screw and take RT Flex. Flame out.
4	LED Holder, Cover plate & Idler U.	Fig. D4-1	1) Pull up and remove LED Holder.
		Fig. D4-2	2) Move LED Flat Cable out of position and unhook 2 springs.
		Fig. D4-3	3) Remove 5 screws and remove Cover Plate & Idler U.
5	Sub Chassis Unit	Fig. D5-1	1) Remove 4 screws.
		Fig. D5-2	2) Remove a screw and unhook a spring from Pinch Arm.
6	Pinch Arm & Center Gear	Fig. D6-1	1) Remove Cut Washer and take Pinch Arm out. 2) Take Center Gear out.
		Fig. D6-2	3) Take Center Gear Spacer out.
7	Rail Unit	Fig. D7-1	1) Make half loading until / Connection Arm comes out.
		Fig. D7-2	2) Disconnect Connection Arms. a) Hold Loading Gear side. b) Disconnect connection arms.
		Fig. D7-3	3) Remove 4 screws.
8	T-Loading Gear & S-Loading Gear	Fig. D8	1) Take T-Loading Gear out. 2) Remove Cut Washer on S-Loading Gear and take S-Loading Gear out. * Removed Cut Washer can not be used again.
9	Gear Cover	Fig. D9	1) Remove a screw and slide Gear Cover to take out.
10	Pinch Beetle & Release Beetle	Fig. D10	1) Remove a washer and take Pinch Beetle and Release Beetle out together.
11	Tension Lever & Eject Arm.	Fig. D11	1) Remove a screw and take Tension Lever out. 2) Remove a washer and take Eject Arm out.
12	Interface Gears	Fig. D12	1) Remove 4 Gears.
13	Cam Gear	Fig. D13	1) Remove Cam Gear.

14	Chassis Radon	Fig. D14	1) Remove a washer.
15	Boat Radon	Fig. D15	1) Remove Boat radon.
16	Drive Gear	Fig. D16	1) Remove Drive Gear and a White Waher underneath.
17	Capstan Holder & Capstan Motor	Fig. D17-1	1) Remove 2 screws and take Capstan Holder out. * It is not necessary to remove 2 screws for New Capstan Holder. Because it shapes screw.
		Fig. D17-2	2) Remove 3 screws and take Capstan Motor out downword.
18	Loading Motor unit & Mechanism Interface Flex.	Fig. D18-1	1) Remove 2 screws and take Loading Motor Unit out.
		Fig. D18-2	2) Remove 4 screws and dissolder at Mode Sw.
*19	Mode Switch , Deceleration Gears & Tension Plate.	Fig. D19	1) Take Mode Sw out. 2) Remove a washer and take Deceleration Gear (A) out. 3) Take Deceleration Gear (B) out. 4) Remove 2 washers and take Tension Plate.
*20	T4 Guide , Eject Lever , Pulley Cover & Pulley.	Fig. D20-1	1) Remove a screw and take T4 Guide out.
		Fig. D20-2	2) Remove a washer and take Eject Lever out.
		Fig. D20-3	3) Remove 2 screw and take Pulley Cover out. 4) Take Pulley out.
*21	S3 Base U.	Fig. D21	1) Remove a screw for S3 adjustment and take S3 Base U.

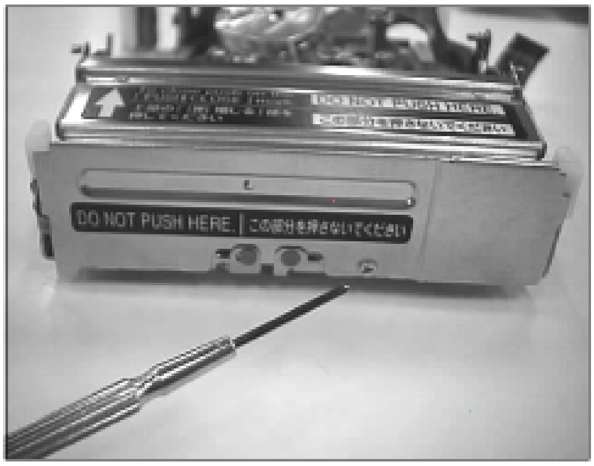
* 1) Procedure 2 for H.Amp Unit is applied only Q1 & Q2 / mechanism. 2) Procedure 19 - 21 can be changed in order.

Fig. D1-1

1/3 (Left)
* Lower one



2/3 (Front)
* Q1 & Q2 : 2screws


DO NOT PUSH HERE.
DO NOT PUSH HERE. | この部分を押さないでください

3/3 (Right)
* Lower one

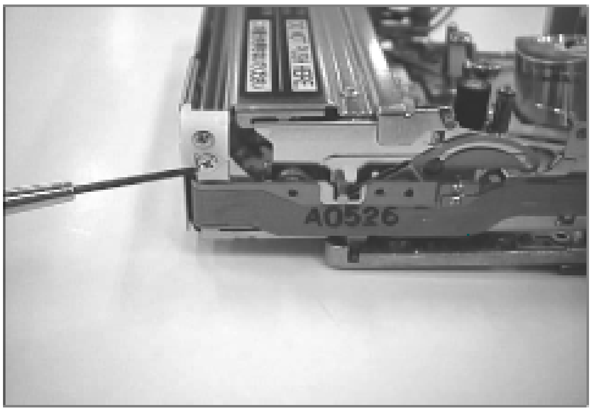


Fig. D1-2

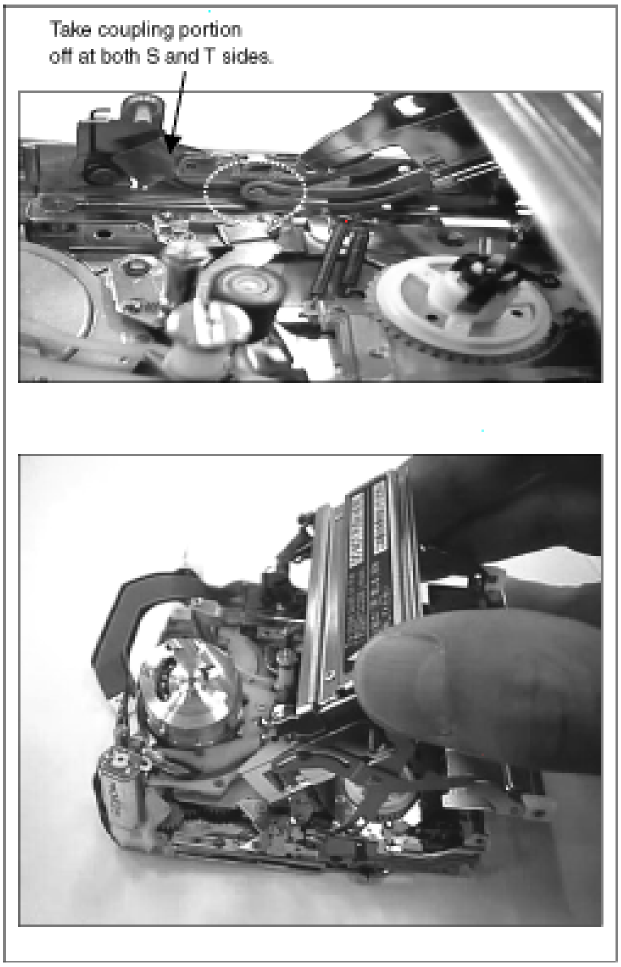

Take coupling portion off at both S and T sides.

Fig. D2-1

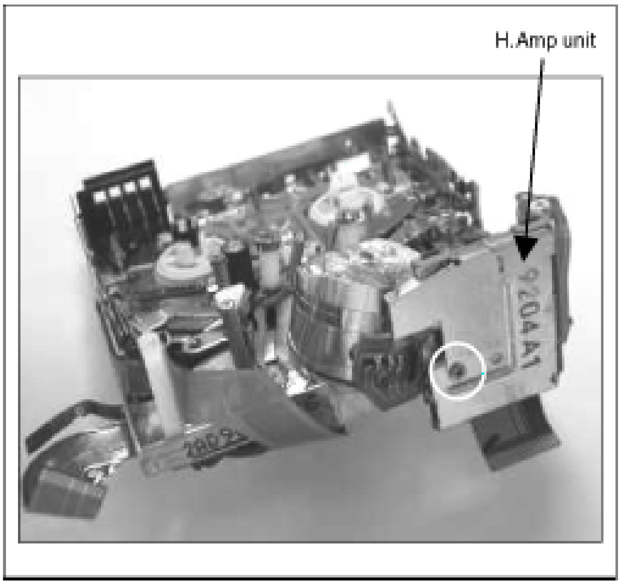

H.Amp unit

Fig. D2-2

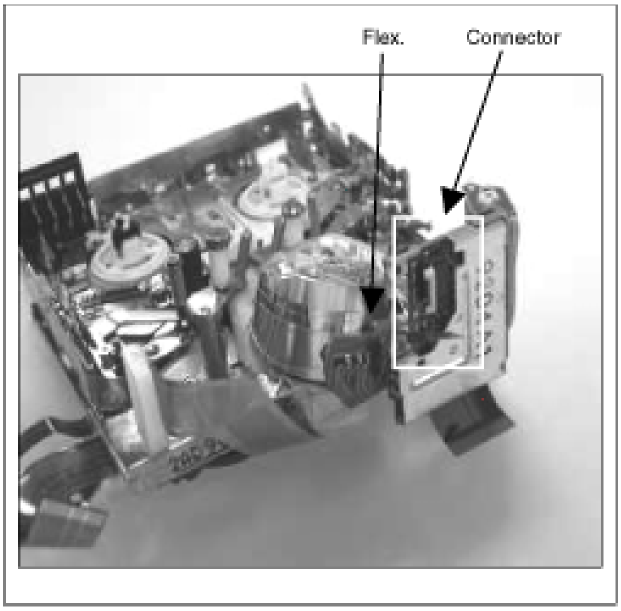


Fig. D2-3

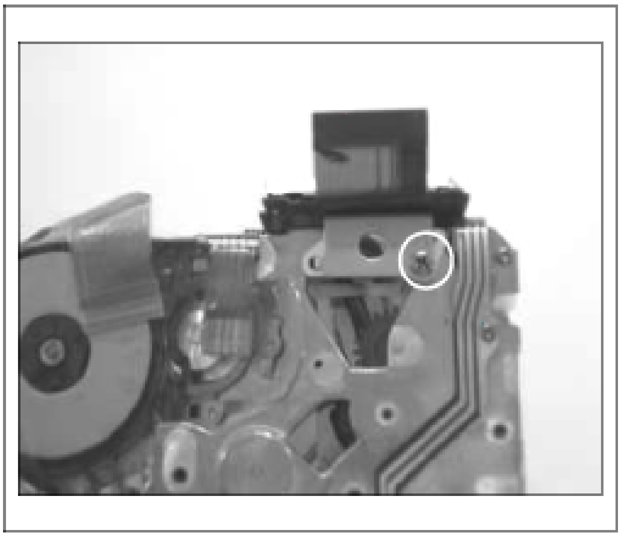


Fig. D3-1

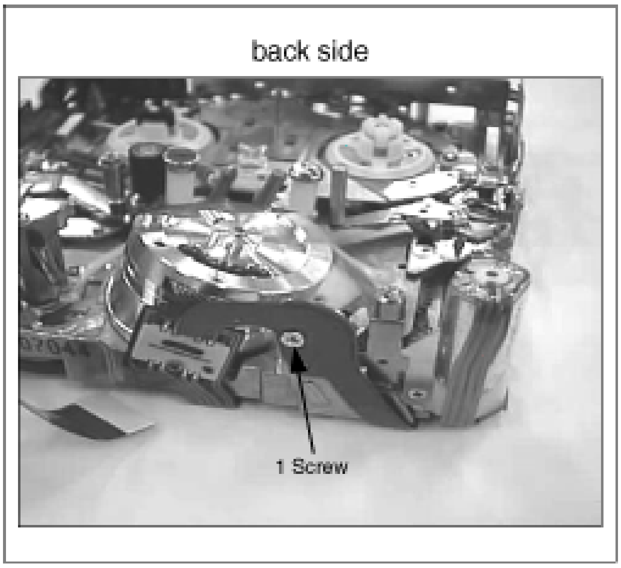

back side
1 Screw

Fig. D3-2

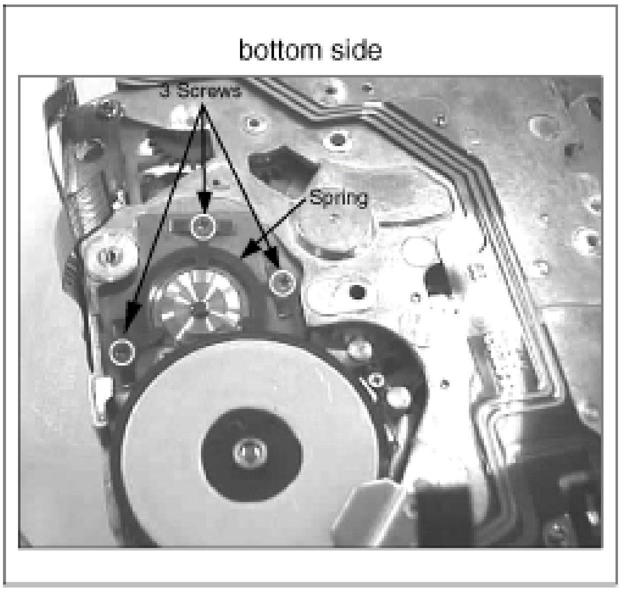

bottom side
3 Screws
Spring

Fig. D3-3

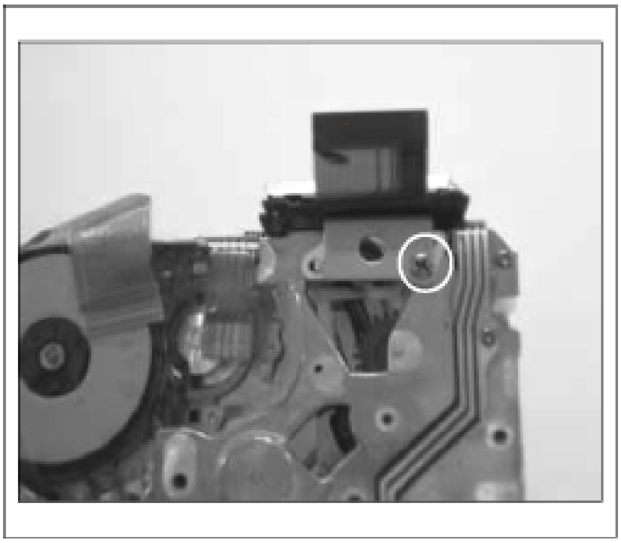


Fig. D4-1

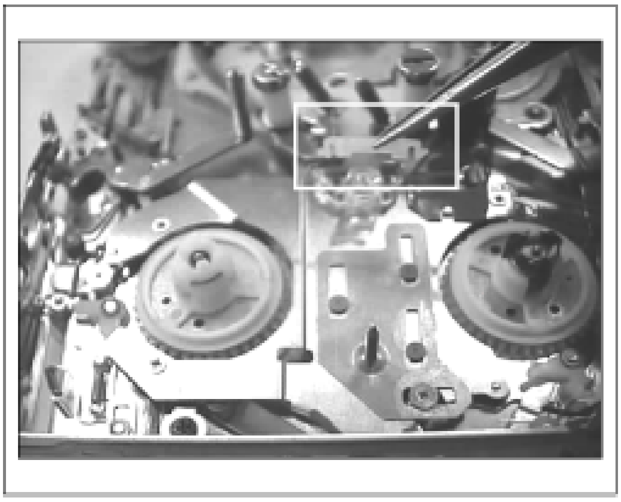
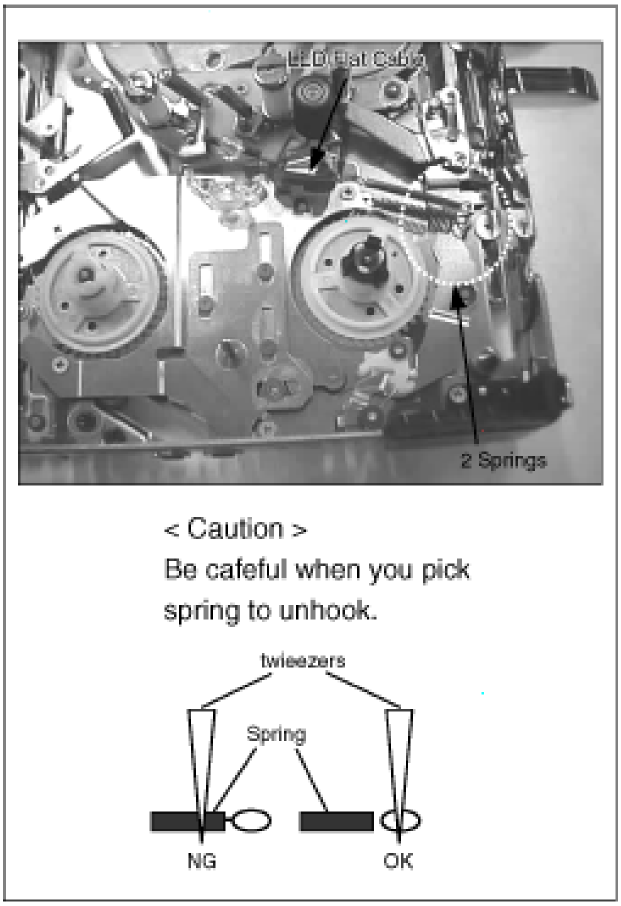


Fig. D4-2


LED Flat Cable
2 Springs
tiweezers
Spring
NG
OK

< Caution >
Be cafeful when you pick spring to unhook.

Fig. D4-3

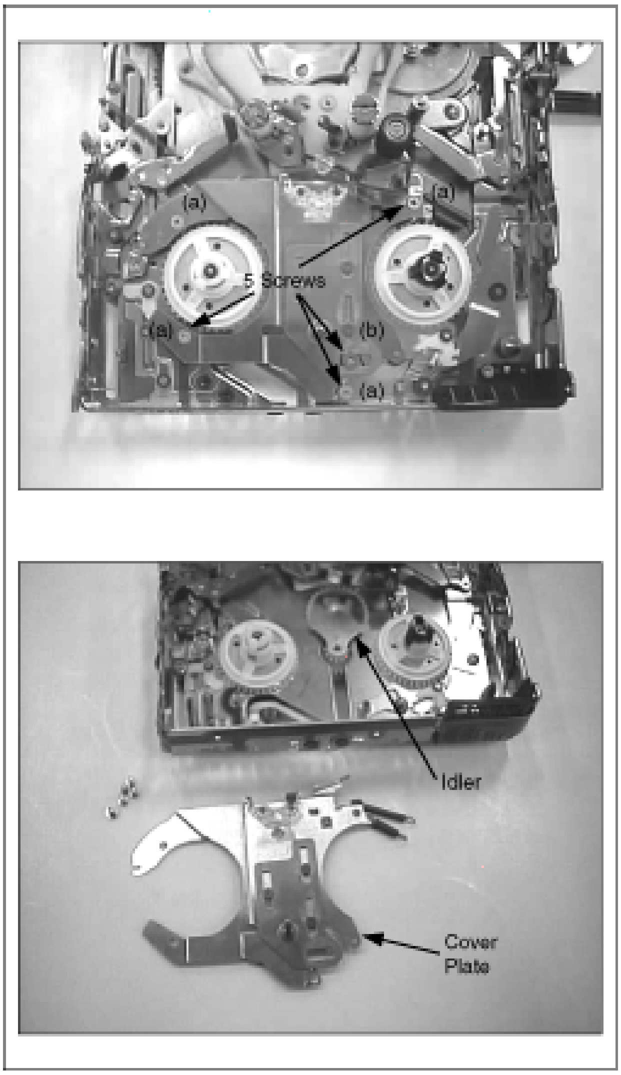

(a)
(a)
5 Screws
(a)
(b)
(a)
Idler
Cover
Plate

Fig. D5-1

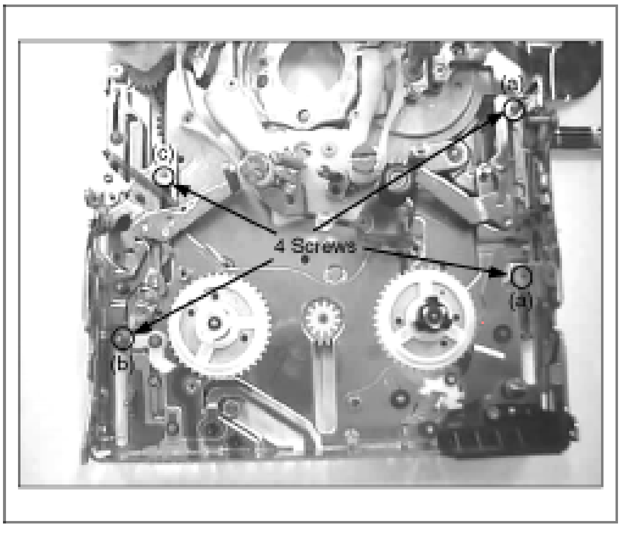

(a)
(c)
4 Screws
(a)
(b)

Fig. D5-2

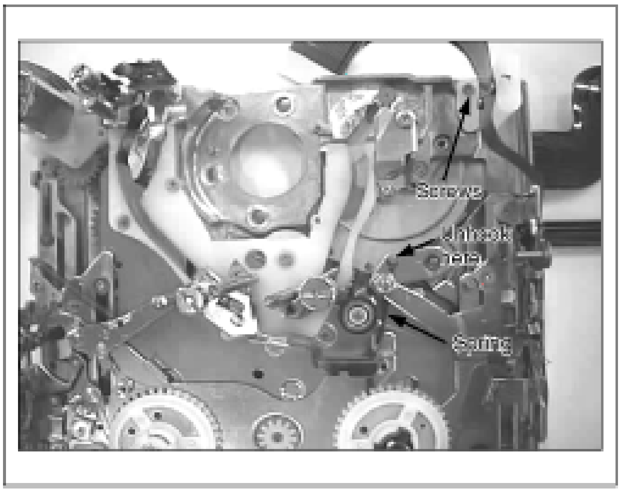

Screws
Unhook here
Spring

Fig. D6-1

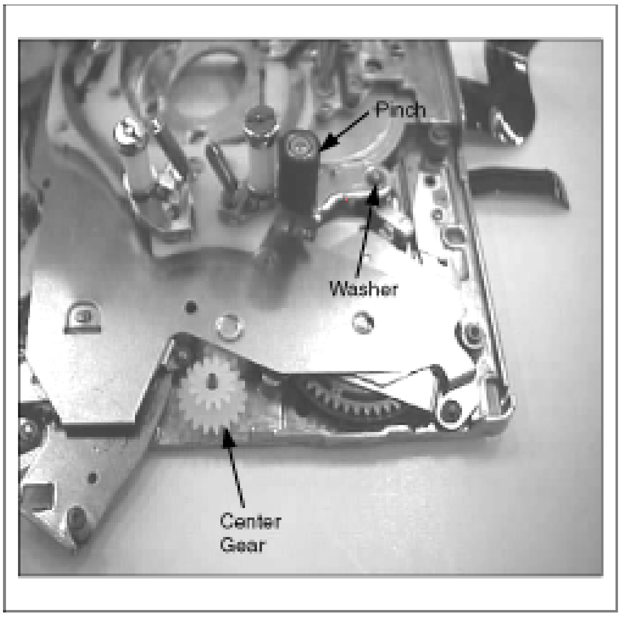

Pinch
Washer
Center Gear

Fig. D6-2

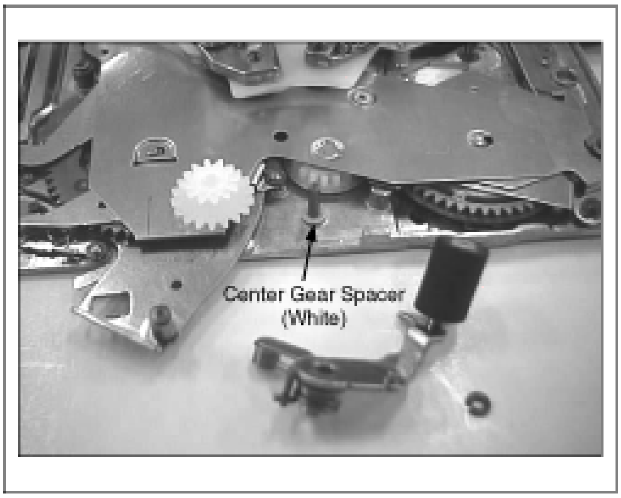

Center Gear Spacer
(White)

Fig. D7-1

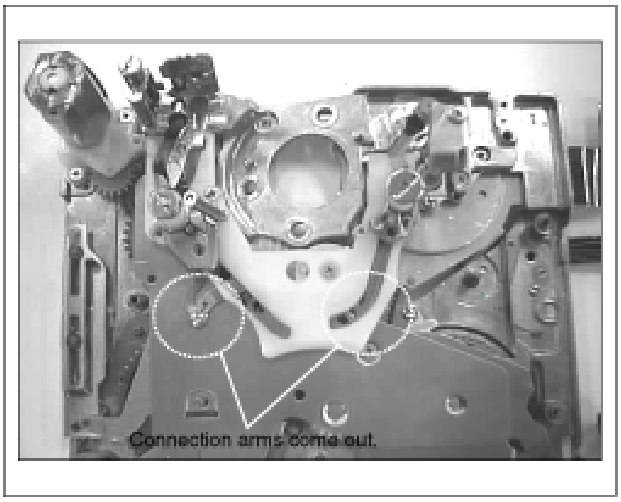
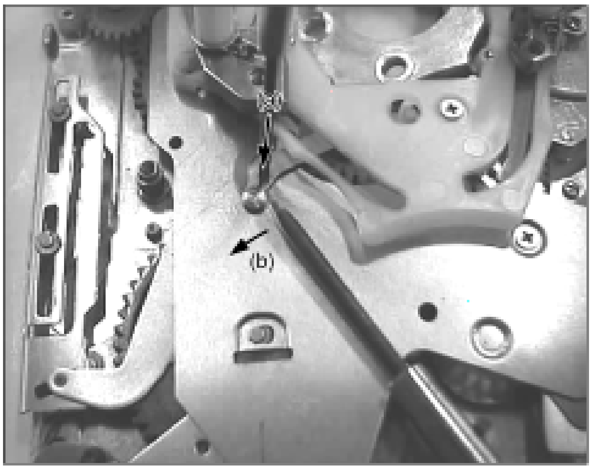

Connection arms come out.

Fig. D7-2

a) Hold Loading Gear side.
b) Disconnect connection arms.

(S-side)



(T-side)

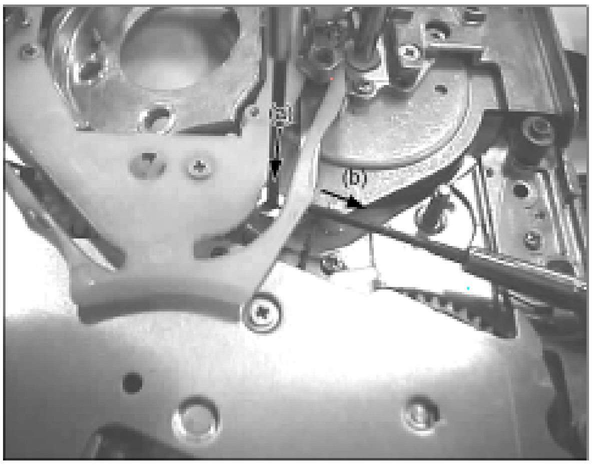


Fig. D7-3

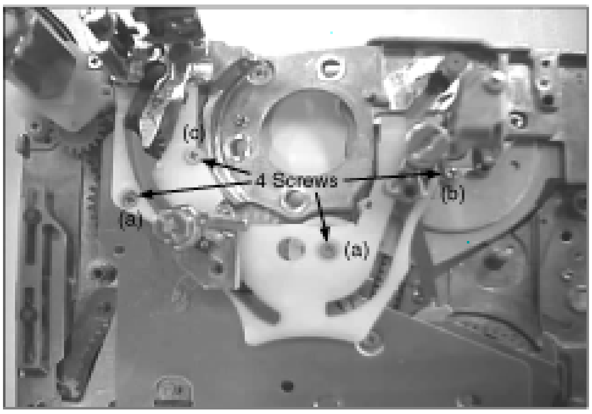


Fig. D8

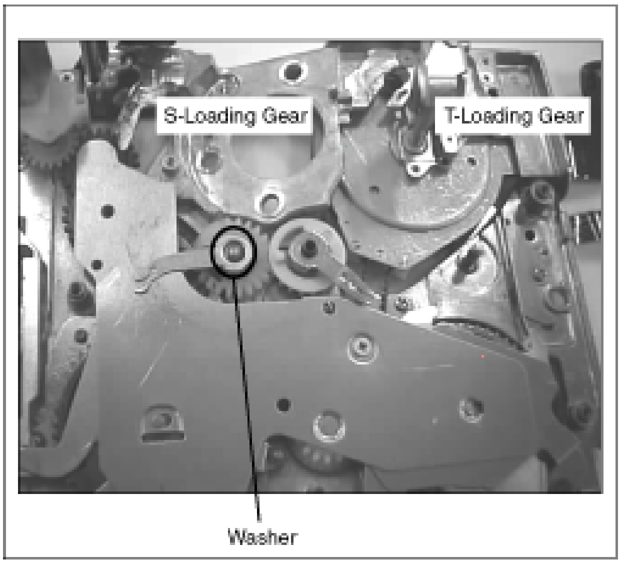

S-Loading Gear
T-Loading Gear
Washer

Fig. D9

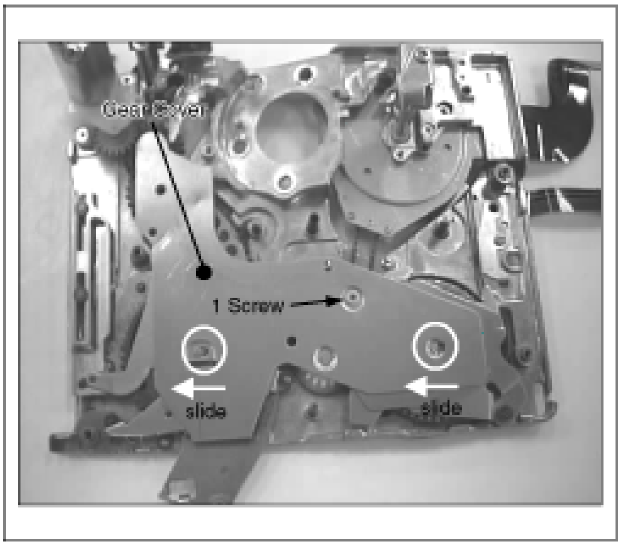

Gear Cover
1 Screw
slide
slide

Fig. D10

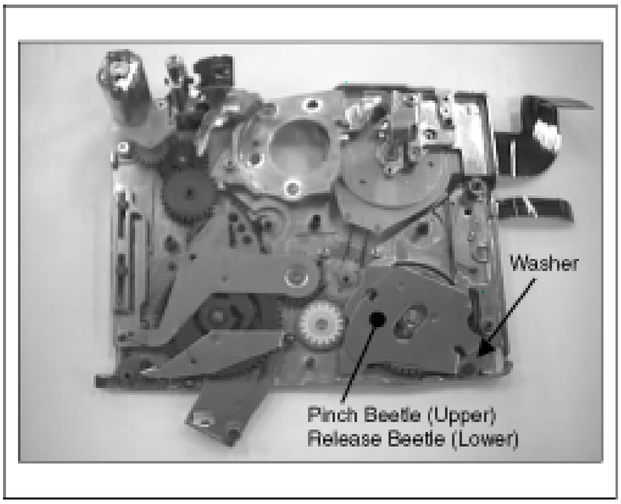

Washer
Pinch Beetle (Upper)
Release Beetle (Lower)

Fig. D11

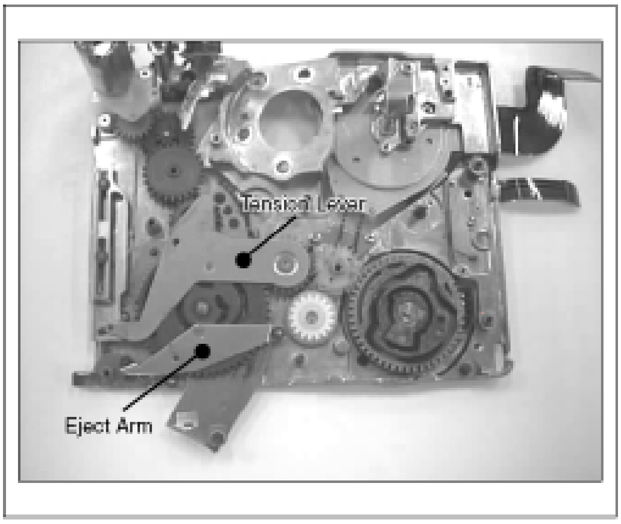

Tension Lever
Eject Arm

Fig. D12

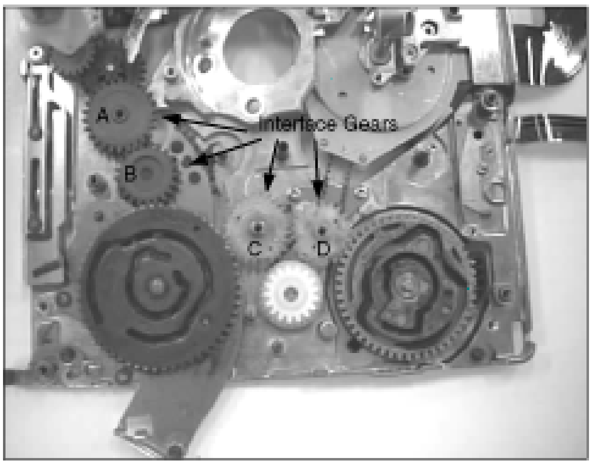

A
B
Interface Gears
C
D

Fig. D13

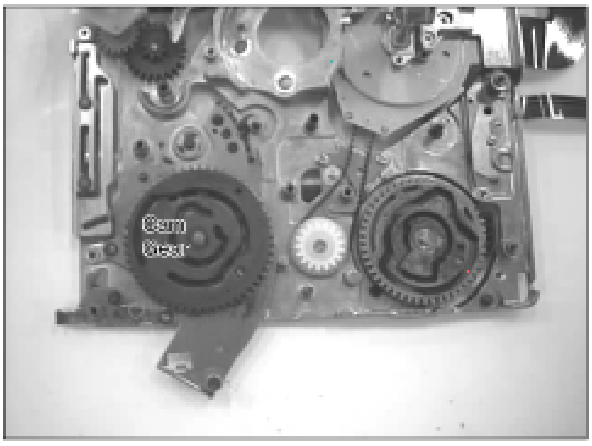


Fig. D14

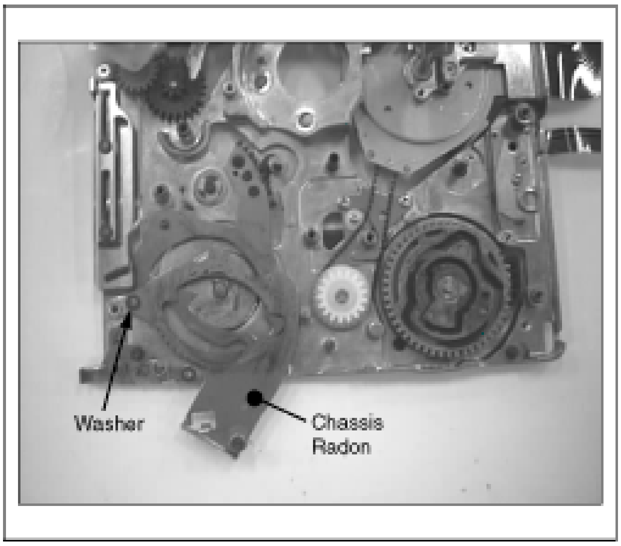

Washer
Chassis
Radon

Fig. D15

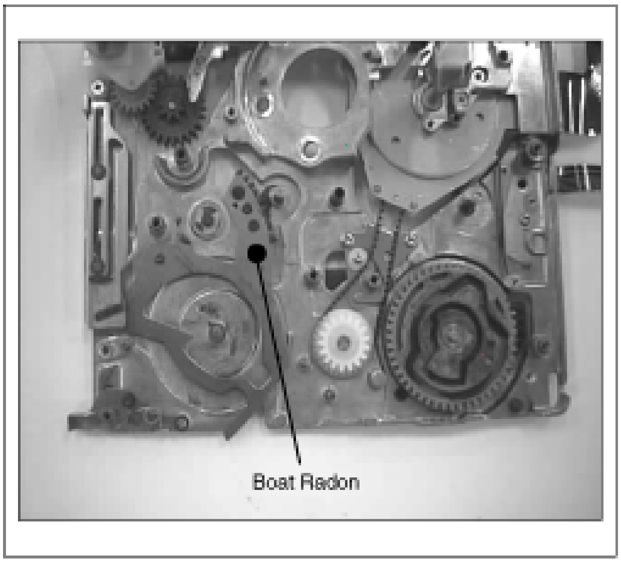


Fig. D16

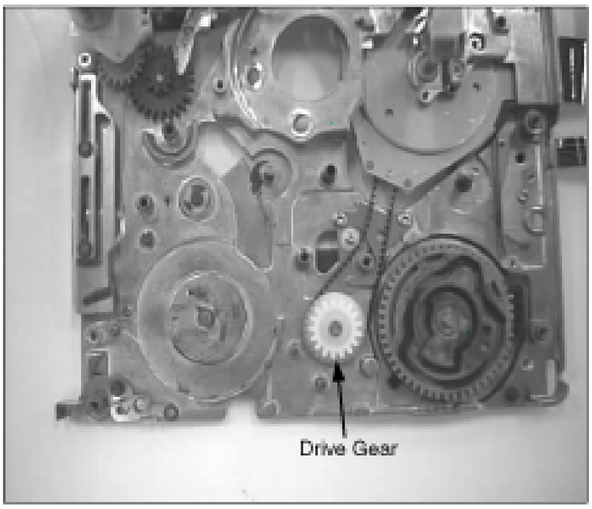
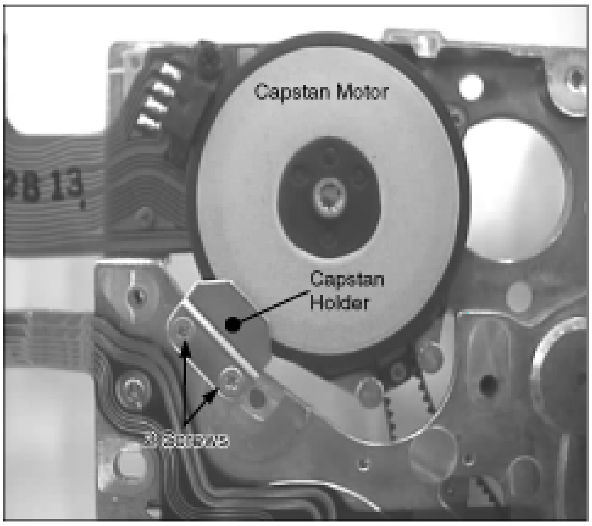


Fig. D17-1


* It is not necessary to remove 2 screws for New Capstan Holder. Because it shapes screw.

Capstan Motor
Capstan Holder
2 Screws
28 13

Fig. D17-2

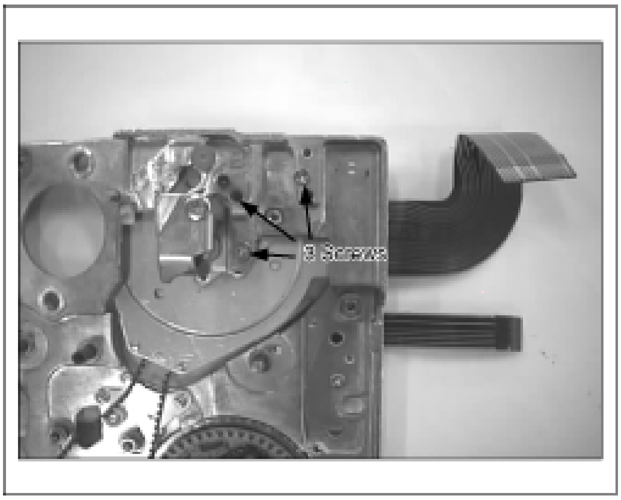


Fig. D18-1

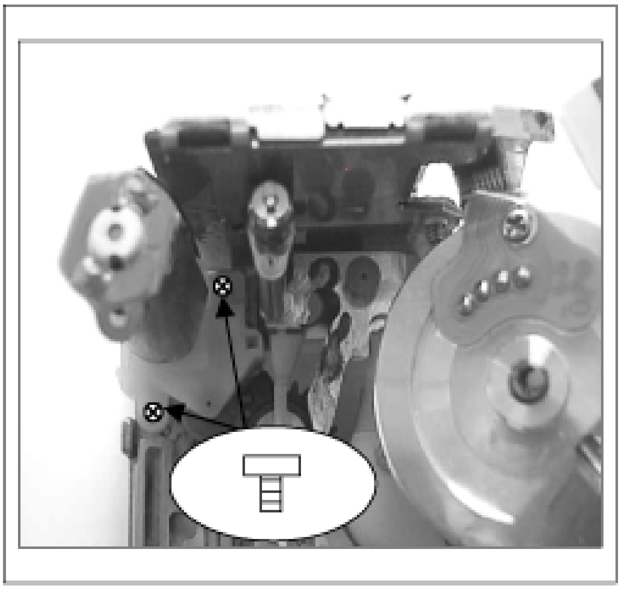


Fig. D18-2

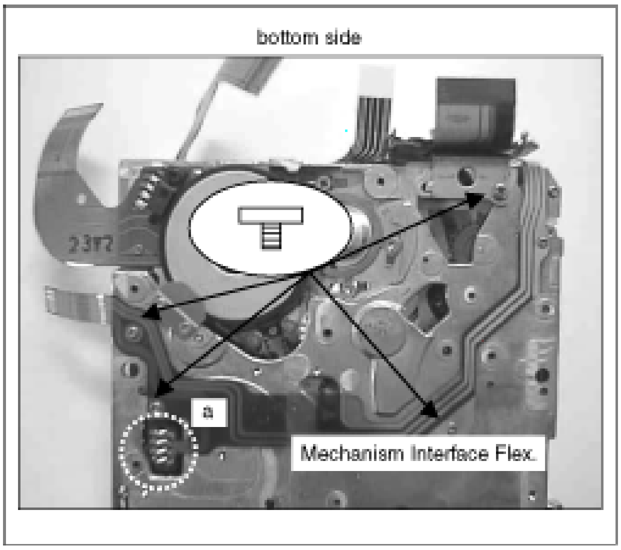

bottom side
a
Mechanism Interface Flex.

Fig. D19

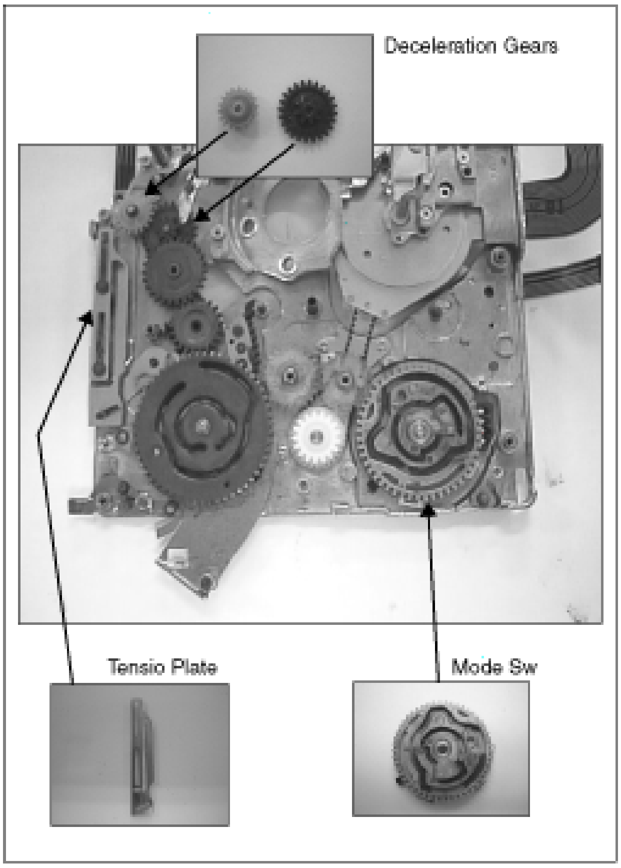

Deceleration Gears
Tensio Plate
Mode Sw

Fig. D20-1

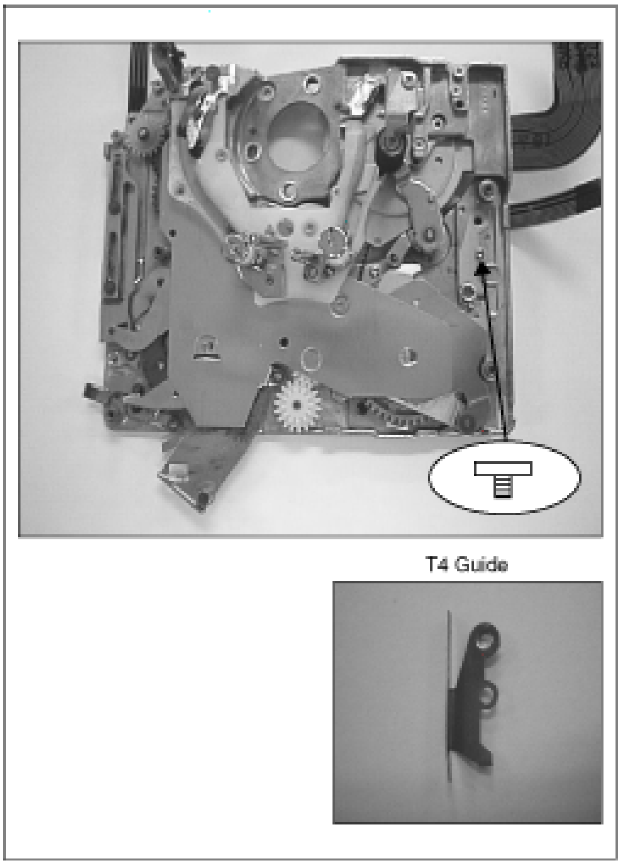


Fig. D20-2

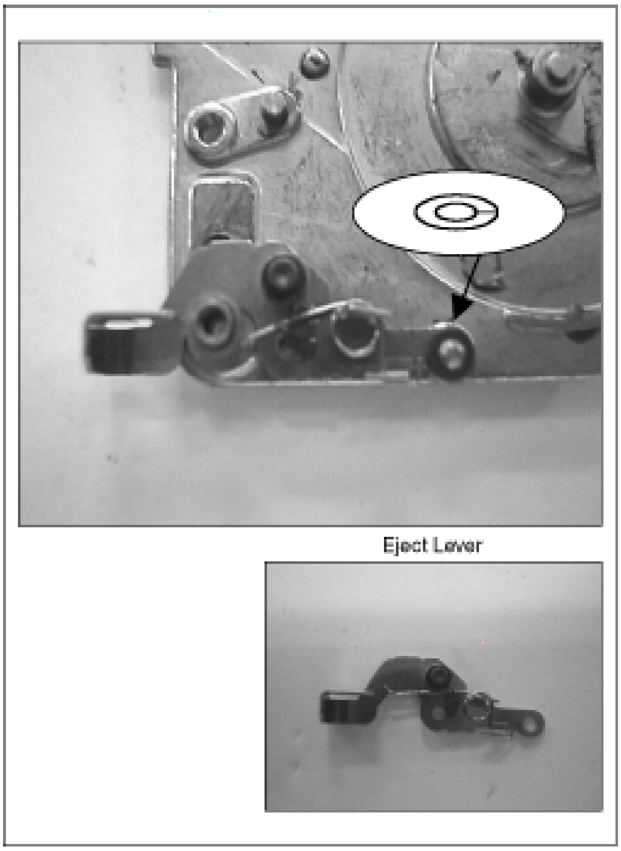


Fig. D20-3

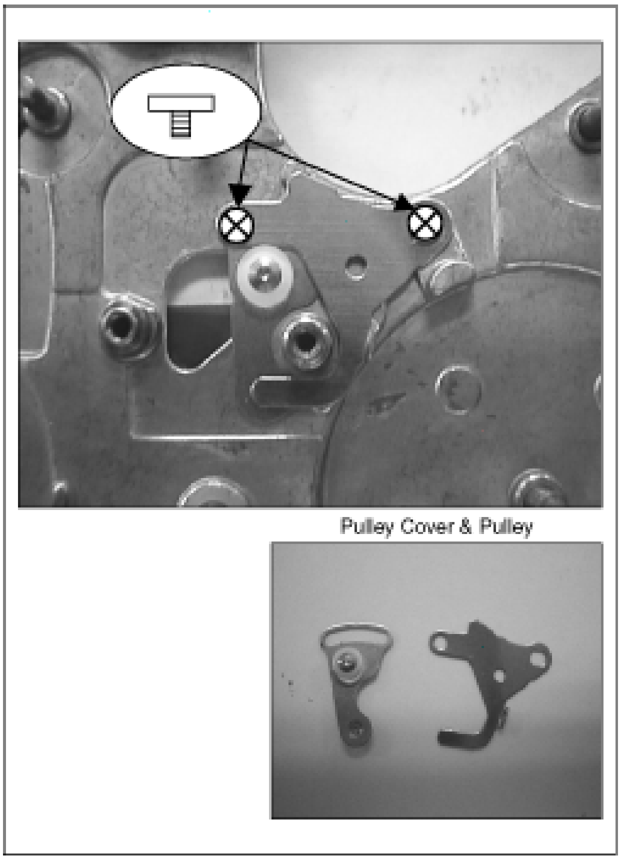
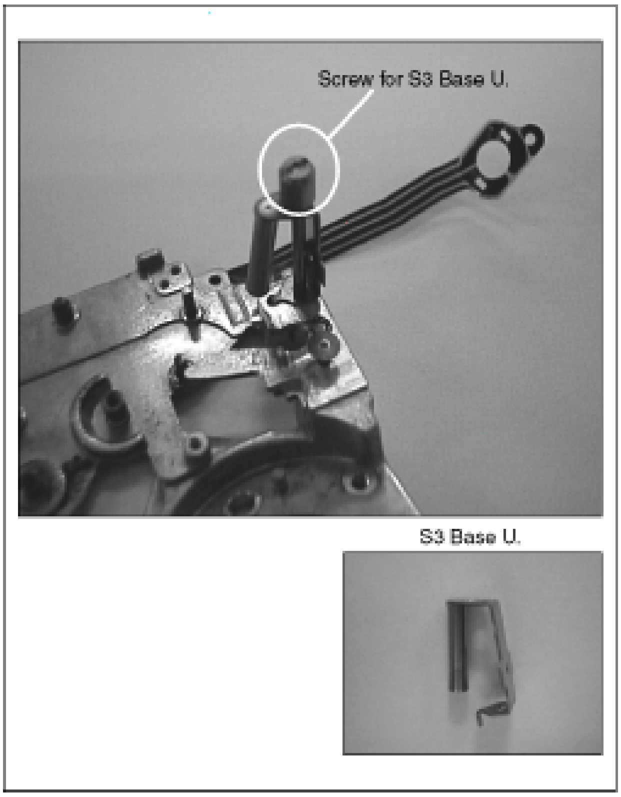

Pulley Cover & Pulley

Fig. D21


Screw for S3 Base U.
S3 Base U.

4.1 ASSEMBLY PROCEDURE

TOP PREVIOUS NEXT

* 1) Procedure 20 for H.Amp Unit is applied only Q1 & Q2 mechanism.

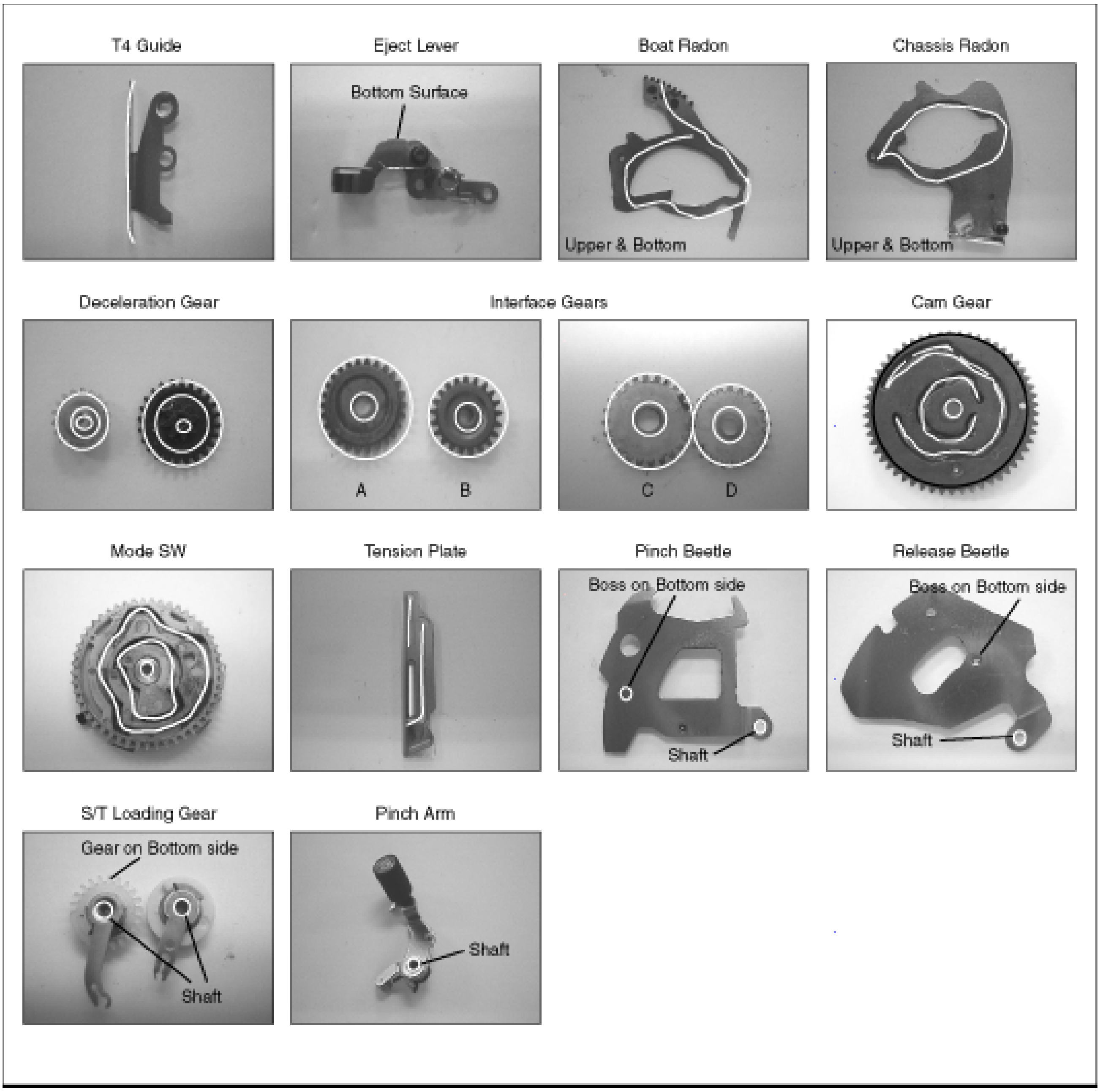
2) Procedure 1 - 3 can be changed in order.

No.	Item	Fig.	Grease	Procedure
*1	S3 Base U.	Fig. A1	--	1) Put S3 Base U on and tighten a screw.
*2	T4 Guide , Eject Lever, Pulley Cover & Pulley.	Fig. A2-1	•	1) Put hole of T4 Guide to hole of chassis and tighten a screw.
		Fig. A2-2	•	2) Put Eject Lever on and a washer.
		Fig. A2-3	--	3) Put boss of Pulley to hole of chassis on. Hole of chassis under pulley should be visible through slit of Pulley.
		Fig. A2-4	--	4) Put Pulley Cover on Pulley and tighten 2 screws.
*3	Mode Switch , Deceleration Gears & Tension Plate.	Fig. A3	•	1) Put Mode Sw on.
			•	2) Put Deceleration Gear (B) on
			•	3) Put Deceleration Gear (A) on and a washer.
			•	4) Put Tension Plate on and 2 washers.
4	Loading Motor unit & Mechanism Interface Flex.	Fig. A4	--	1) Put Loading Motor Unit on and tighten 2 screws.
			--	2) Put Mechanism Interface Flex on and tighten 4 screws. After that, solder at terminal of Mode Sw.
5	Capstan Holder & Capstan Motor	Fig. A5-1	--	1) Put Capstan Motor on and tighten 3 screws. Timing Belt should be between Pulley and boss.
		Fig. A5-2	--	2) Put Capstan Holder on and tighten 2 screws.
6	Drive Gear	Fig. A6	--	1) Put a washer to shaft and install Drive Gear. Timing Belt should be wound around Drive Gear. After that, confirm Timing Belt and Gear are rotated together.
7	Boat Radon	Fig. A7	•	1) Put hole of Boat radon to shaft of chassis.
8	Chassis Radon	Fig. A8	•	1) Put Chassis Radon and a washer on.
9	Cam Gear	Fig. A9	•	1) Put Cam Gear on. Phase Mark should be in the same line with chassis of shaft..
10	Interface Gears	Fig. A10-1	•	1) Put Interface Gear(C) & (D). Each phase mark should be in the same line.
		Fig. A10-2	•	2) Put Interface Gear(A) & (B) on.
11	Tension Lever & Eject Arm.	Fig. A11	--	1) Put boss of Tension Lever into slit of Cam Gear and Tension Plate, then tighten a screw.

				2) Put boss of Eject Arm into slit of Cam Gear. Put a washer on shaft of chassis.
12	Pinch Beetle & Release Beetle	Fig. A12	•	1) Put boss of Pinch Beetle into slit of Mode Sw.
				2) Put boss of Release Beetle into slit of Mode Sw.
				3) Put a washer on.
13	Gear Cover	Fig. A13	--	1) Keep sliding Gear Cover and put it on.
				2) Tighten a screw.
14	T-Loading Gear & S-Loading Gear	Fig. A14	•	1) Put S-Loading Gear on.
				2) Put T-Loading Gear on. Each phase mark should be in the same line.
15	Rail Unit	Fig. A15-1	--	1) Make half loading until Connection Arm comes out.
		Fig. A15-2	--	2) Connect Arm of S & T Loading Gear and Connection Arms. a) Hold Loading Gear side. b) Push Arm of S & Tloading Gear into slit of connection arms.
		Fig. A15-3	--	3) Tighten 4 screws.
16	Pinch Arm & Center Gear	Fig. A16-1	--	1) Put Center Gear Spacer on shaft of chassis.
				2) Put Center Gear on.
		Fig. A16-2	•	3) Make full loading position and put Pinch arm on, then put a washer on.
17	Sub Chassis Unit	Fig. A17-1	--	1) Make unloading position until moving Release Beetle Confirm spring is exist.
		Fig. A17-2		2) Put Sub Chassis Unit on as pre-installation.
		Fig. A17-3		3) Tighten 3 screws. Make Loading position until 1 screw position appears, then tighten a screw.
		Fig. A17-4		4) Tighten a screws at Flex Holder portion and Hook spring back to Pinch Arm.
18	LED Holder, Cover plate & Idler U.	Fig. A18-1	--	1) Put Idler U into shaft of Drive Gear.
		Fig. A18-2	--	2) Put Cover Plate on and tighten 5 screws, then hook 2 springs to 2hooking portion of Sub chassis. And also put LED Flat Cable back.
		Fig. A18-3		3) Put LED Holder back.
19	Confirmation of Mechanism movement , Cylinder Unit & RT Flex. Flame.	Fig. A19-1	--	1) Confirm loading and unloading is smooth.
		Fig. A19-2	--	2) Put Cylinder Unit & Spring on and tighten 3 screws.
		FIg. A19-3	--	3) Put RT Flex. Flame on and tighten 2 screws.
*20	H Amp Unit. (Only Q1 & Q2)	Fig. A20-1	--	1) Put H Amp Unit on and tighten a screw at bottom of chassis.
		Fig. A20-2		2) Connect Cylinder Flex to connector.

		Fig. A20-3		3) Put Shield case on and tighten a screw.
21	Cassette Up Unit.	Fig. A21-1	--	1) Put both S &T sides to coupling portion on.
		Fig. A21-2		2) Tighten 3 screws. (Q1 &2 have 4 screws)

The following parts should be applied Molyton Grease (VFK1024).


T4 Guide
Eject Lever
Bottom Surface
Boat Radon
Upper & Bottom
Chassis Radon
Upper & Bottom
Deceleration Gear
Interface Gears
A
B
C
D
Cam Gear
Mode SW
Tension Plate
Pinch Beetle
Boss on Bottom side
Shaft
Release Beetle
Boss on Bottom side
Shaft
S/T Loading Gear
Gear on Bottom side
Shaft
Pinch Arm
Shaft

How to use washer jigs.

No.	Item	Fig.	Procedure

1	Washer Jigs	Fig. W1-1	1) Each Washers.
2		Fig. W1-2	1) Put a washer on tip of Jig.
3		Fig. W1-3	1) Put Jig on shaft.
4		Fig. W1-4	1) Put a washer on shaft by pressing Jig.

Fig. W1-1

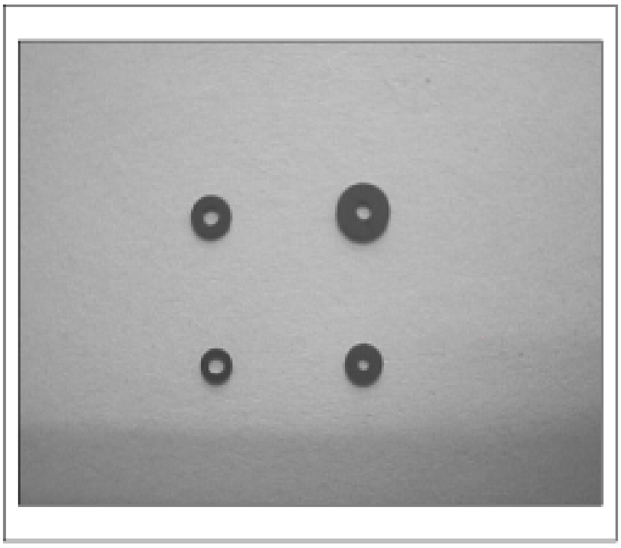


Fig. W1-2

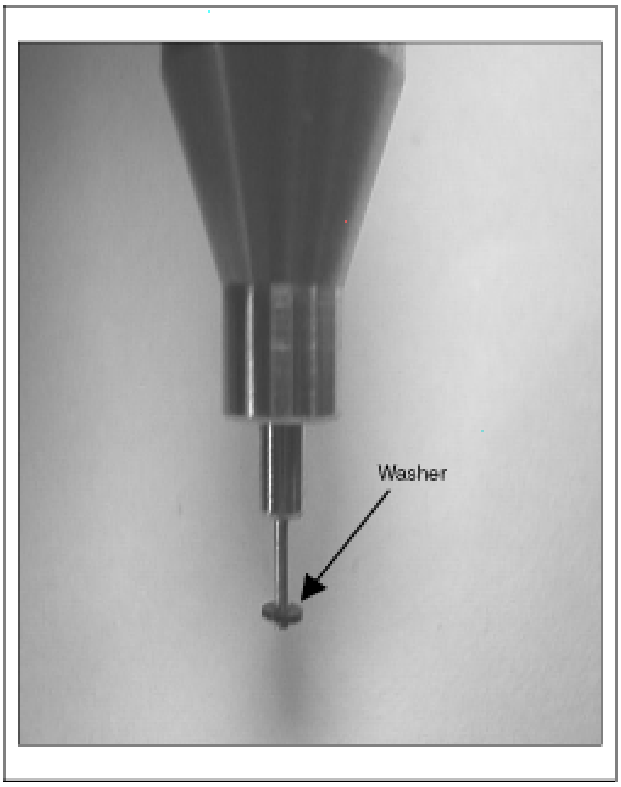


Fig. W1-3

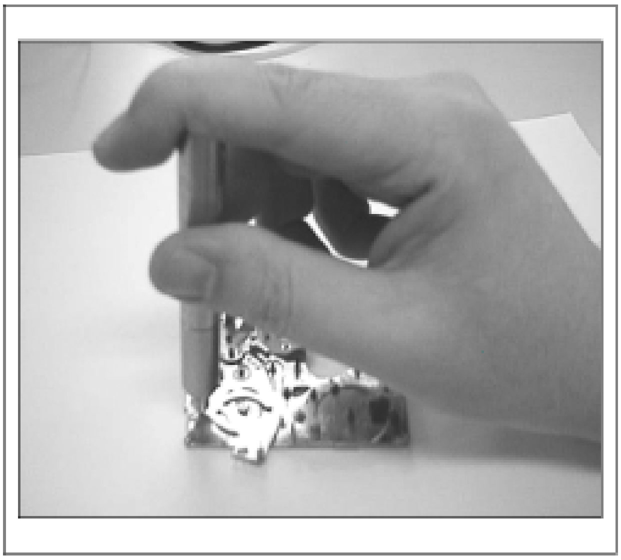


Fig. W1-4

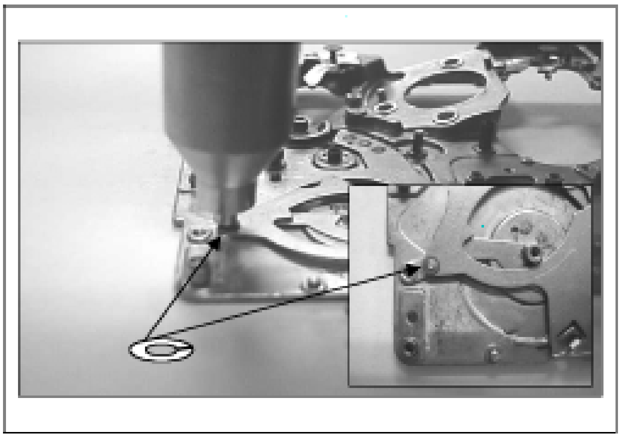


Fig. A1

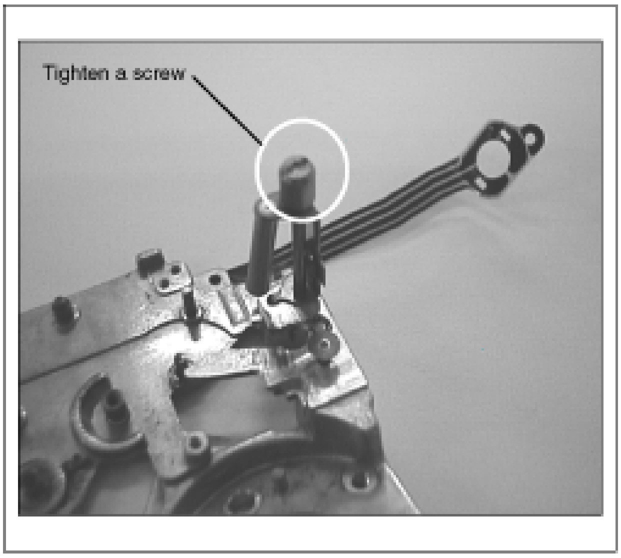


Fig. A2-1

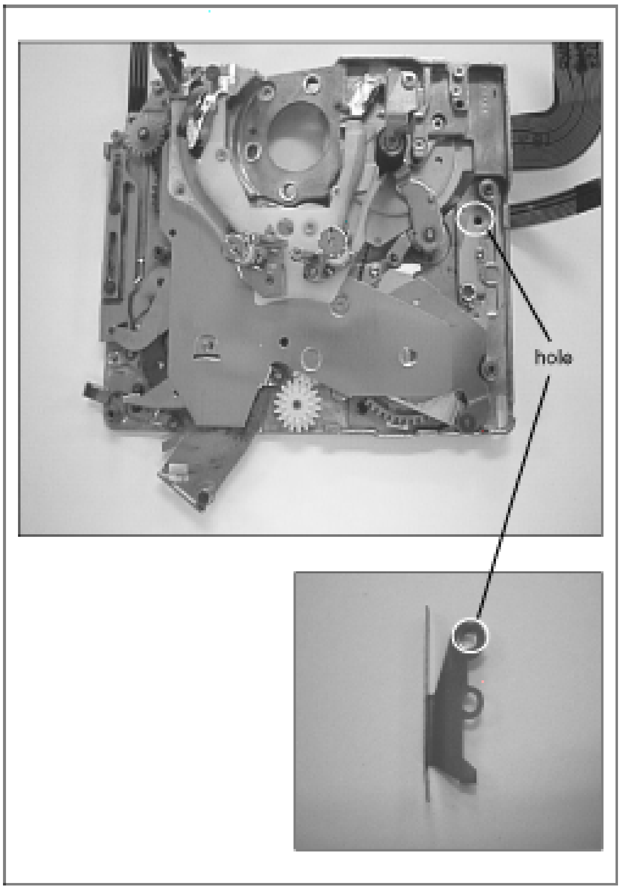


Fig. A2-2

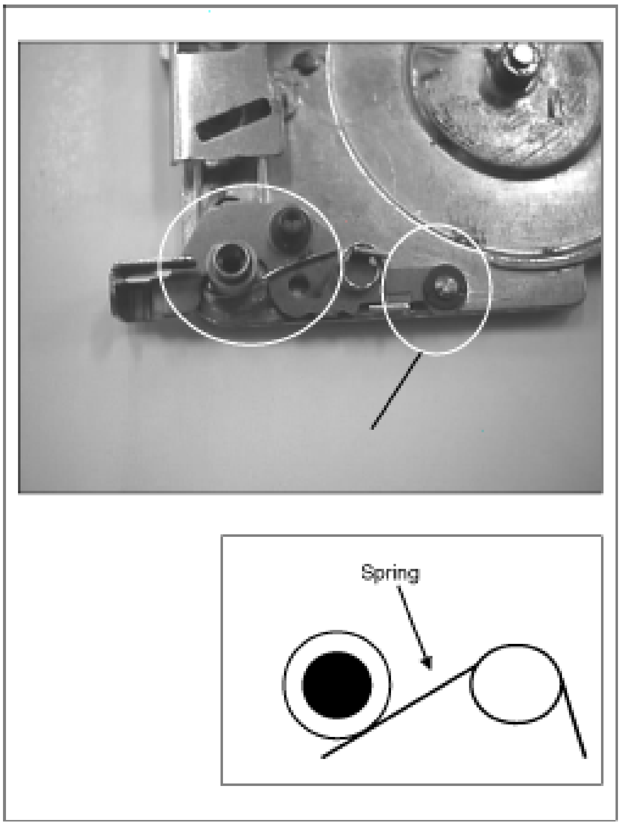


Fig. A2-3

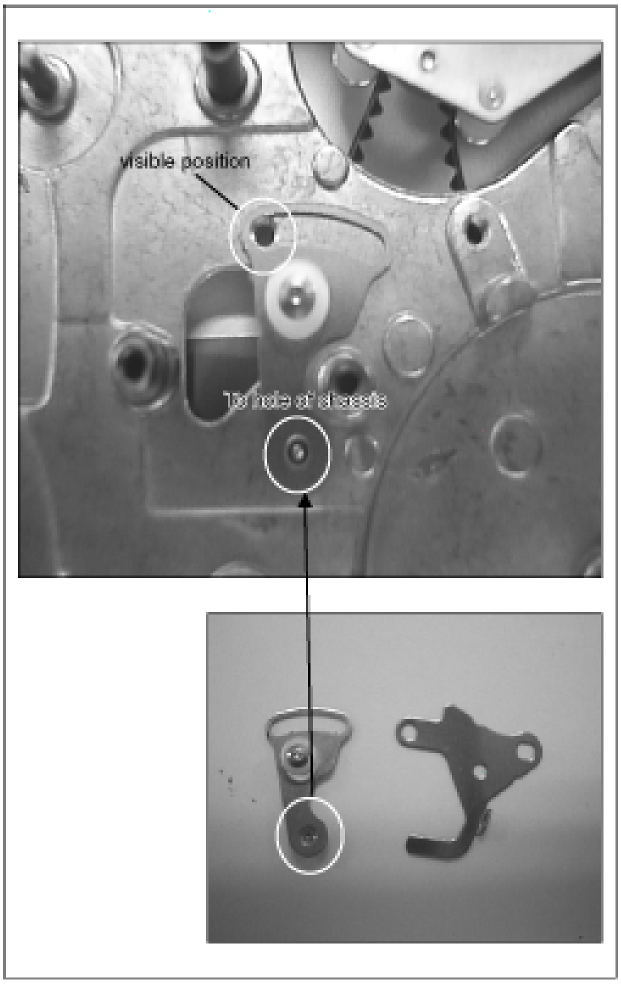

visible position
To hole of chassis

Fig. A2-4

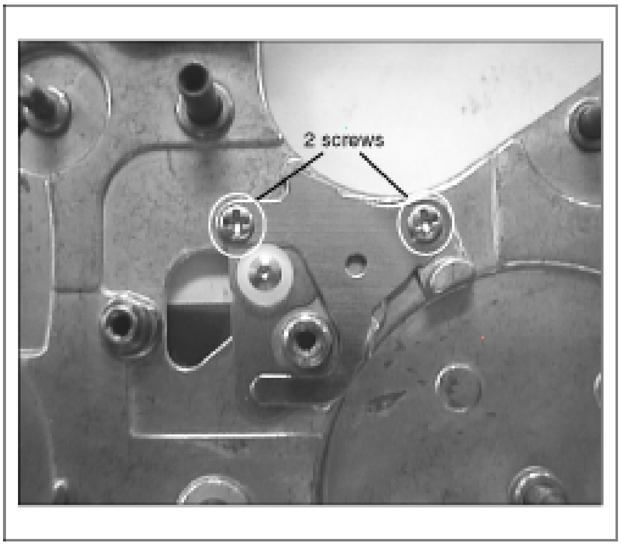


Fig. A3

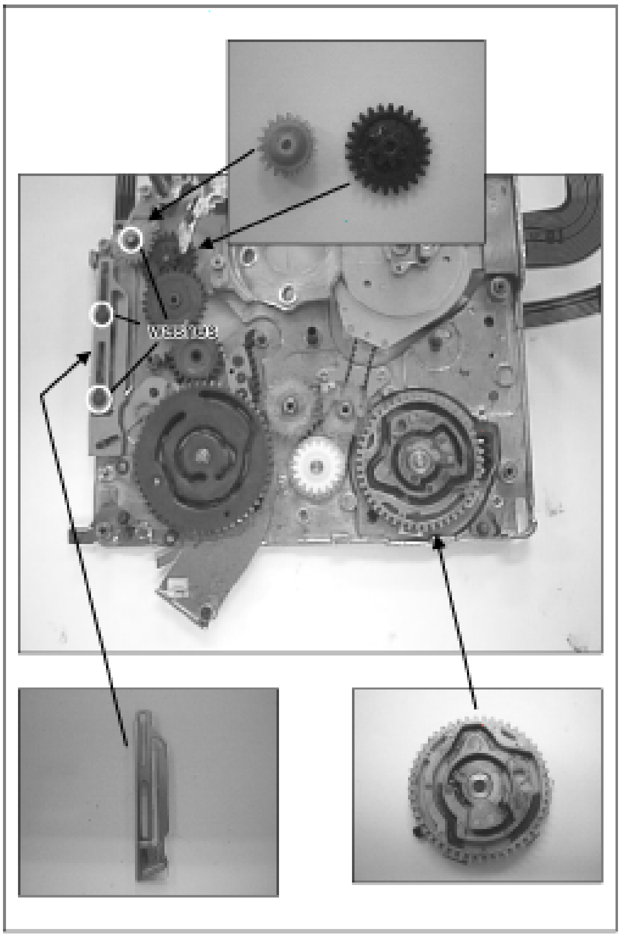


Fig. A4

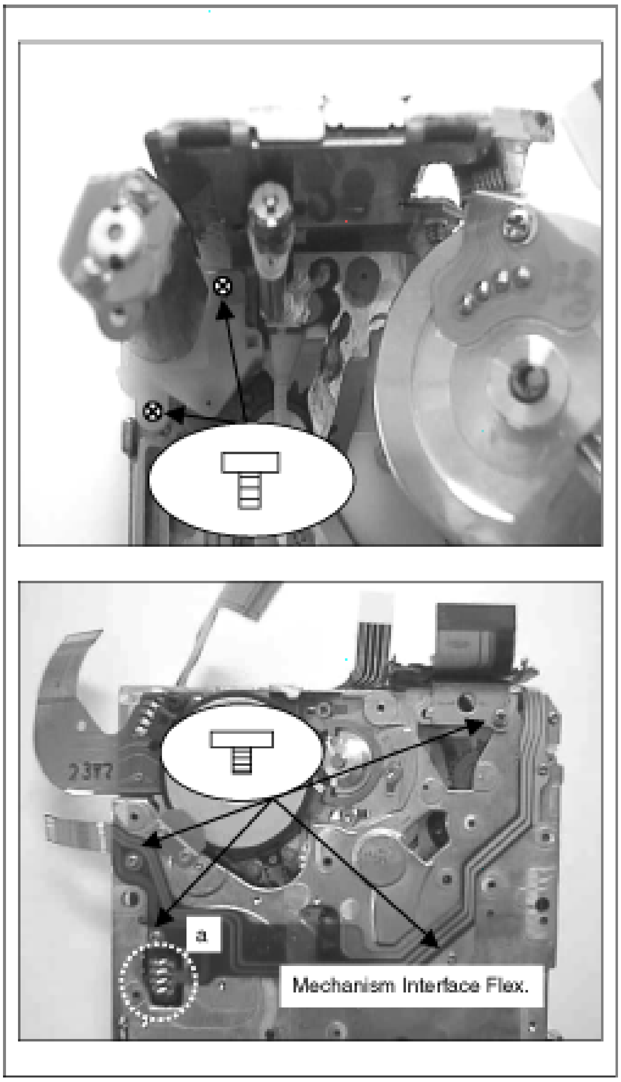

a
Mechanism Interface Flex.

Fig. A5-1

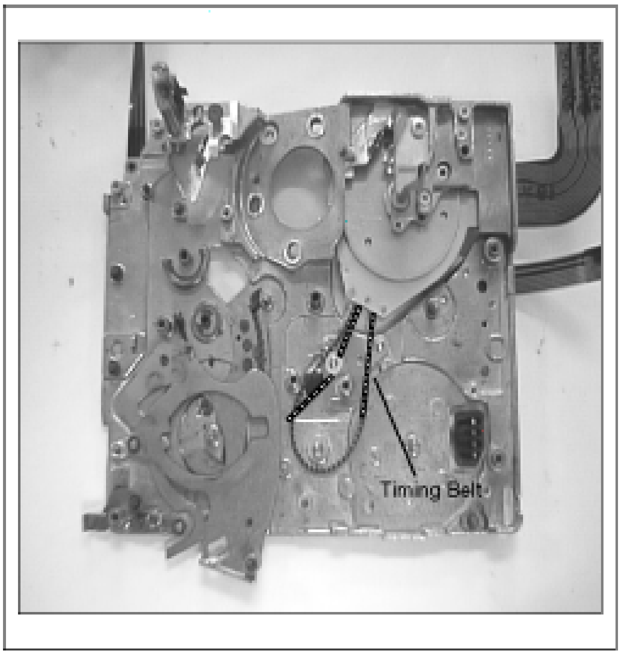


Fig. A5-2

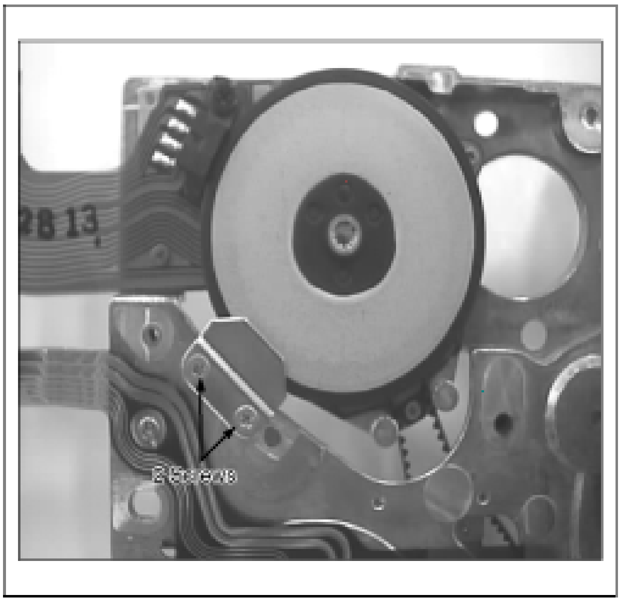


Fig. A6

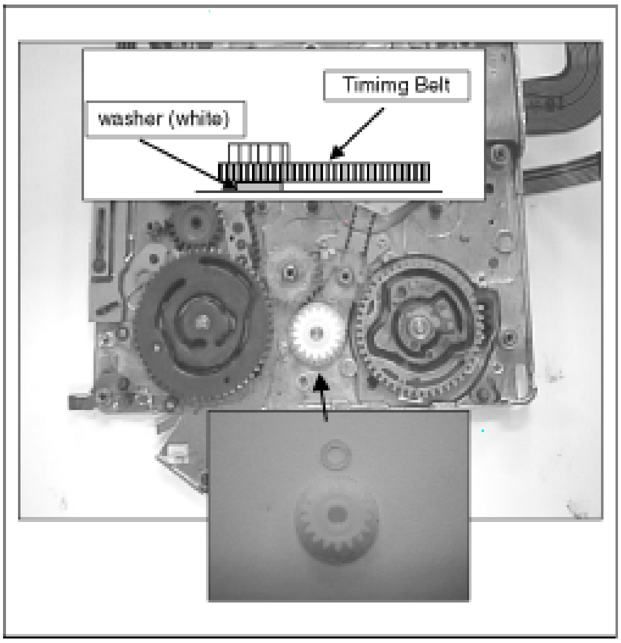

Timimg Belt
washer (white)

Fig. A7

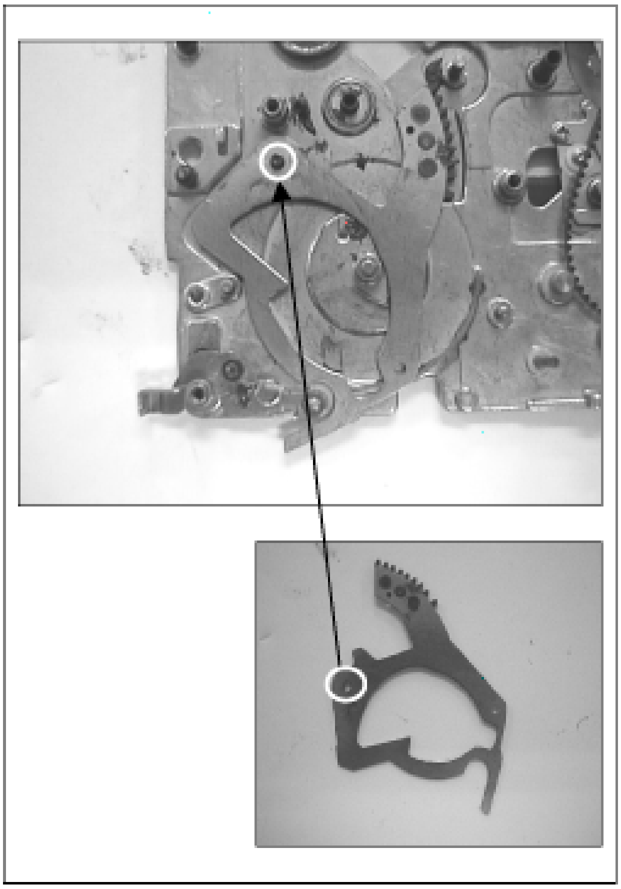


Fig. A8

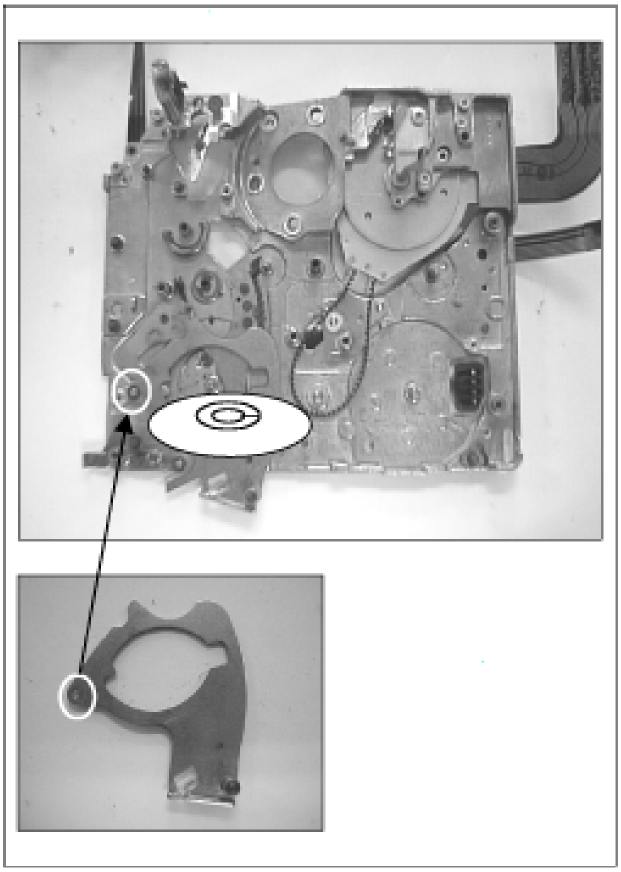
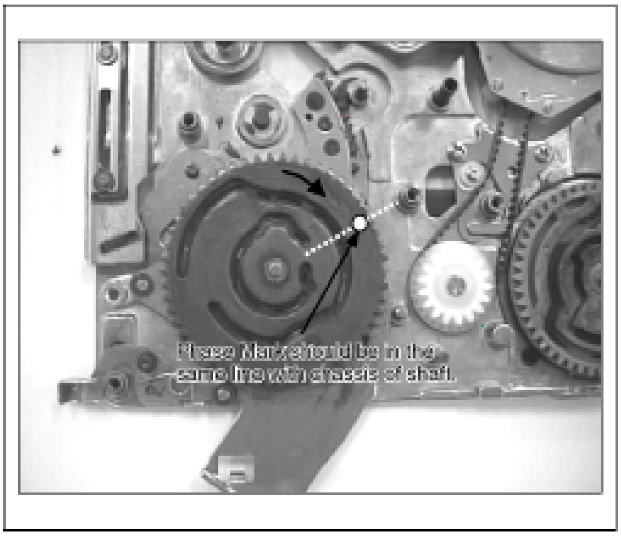


Fig. A9



Phase Mark should be in the same line with chassis of shaft.

Fig. A10-1

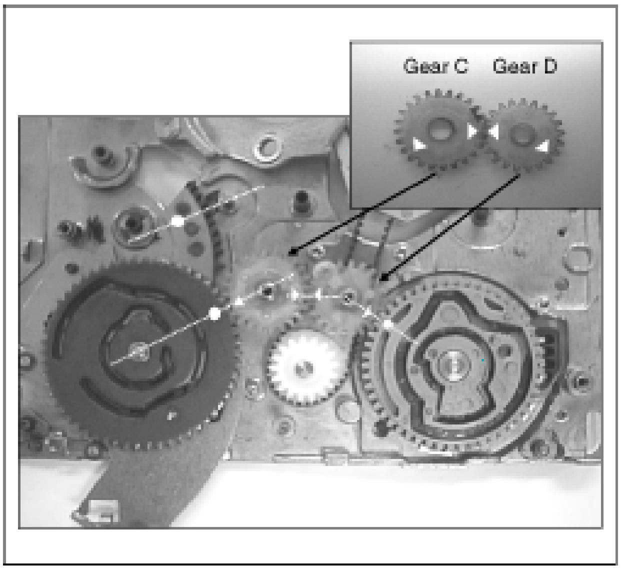

Gear C
Gear D

Fig. A10-2

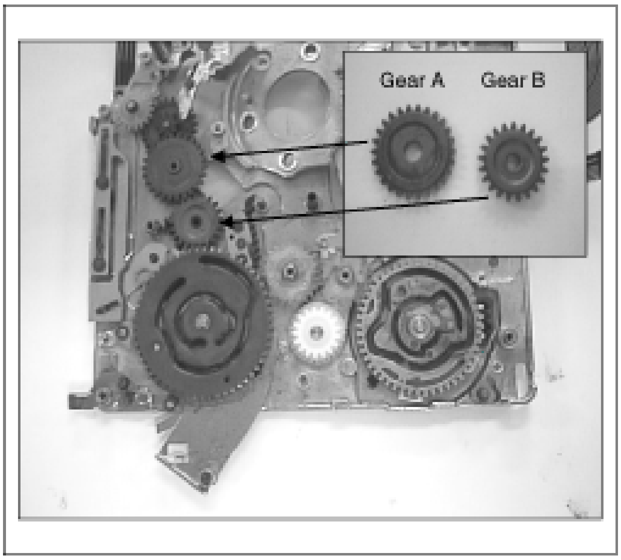

Gear A
Gear B

Fig. A11

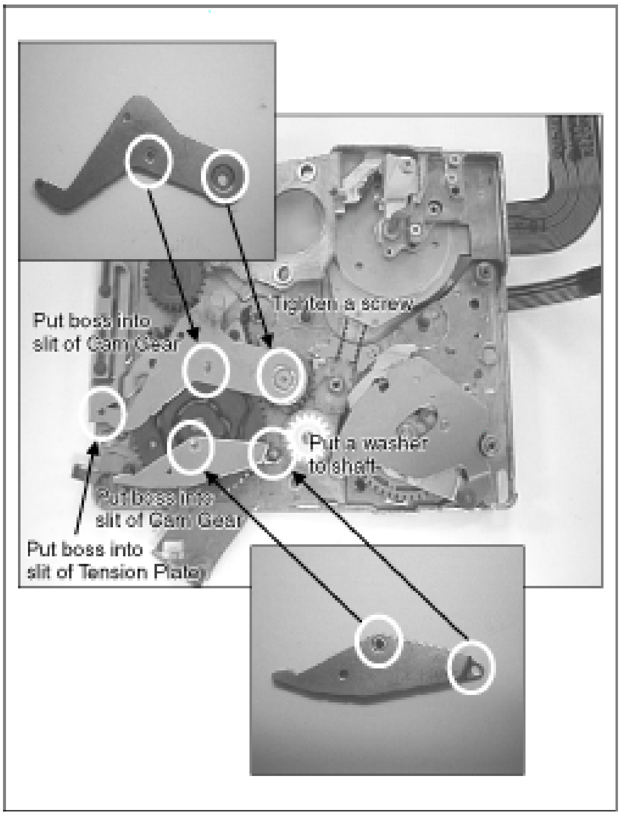

Tighten a screw
Put boss into slit of Cam Gear
Put a washer to shaft
Put boss into slit of Cam Gear
Put boss into slit of Tension Plate

Fig. A12

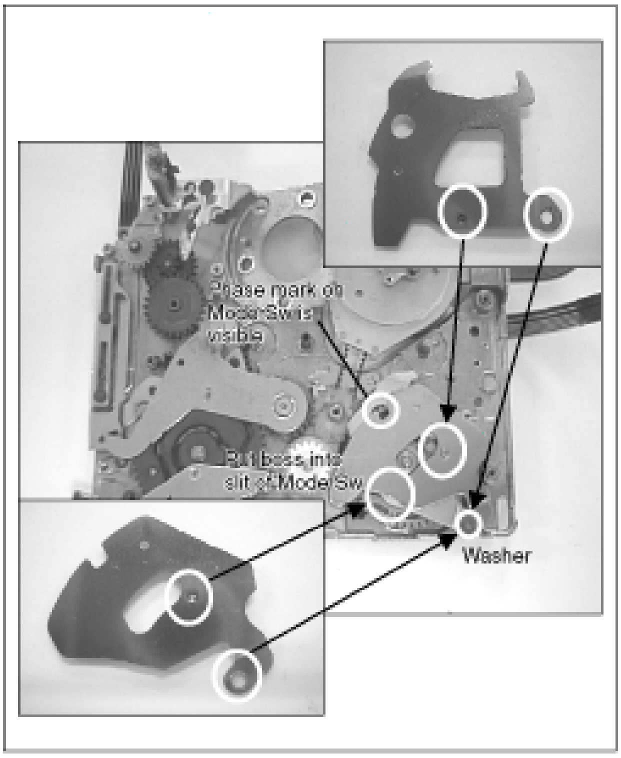

Phase mark on Mode Sw is visible
Put boss into slit of Mode Sw
Washer

Fig. A13

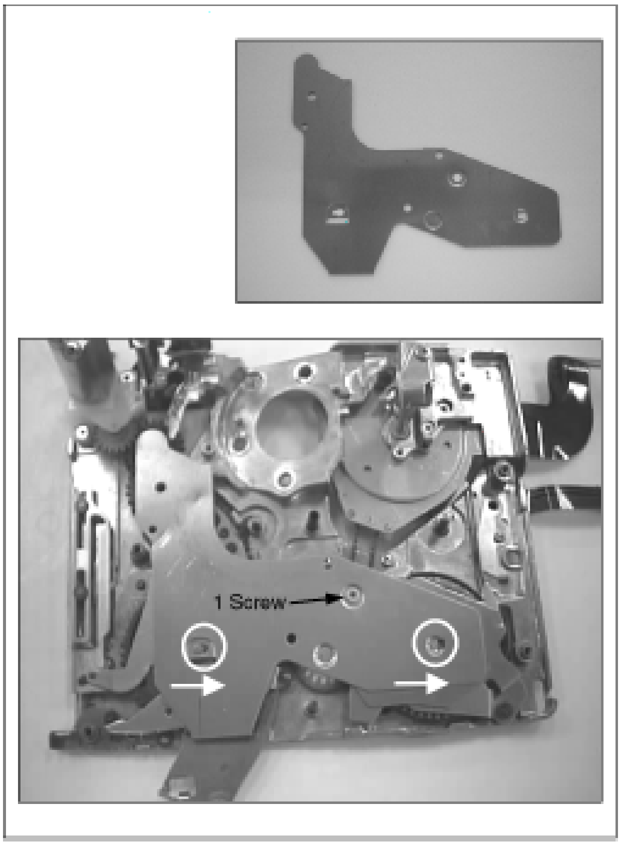


Fig. A14

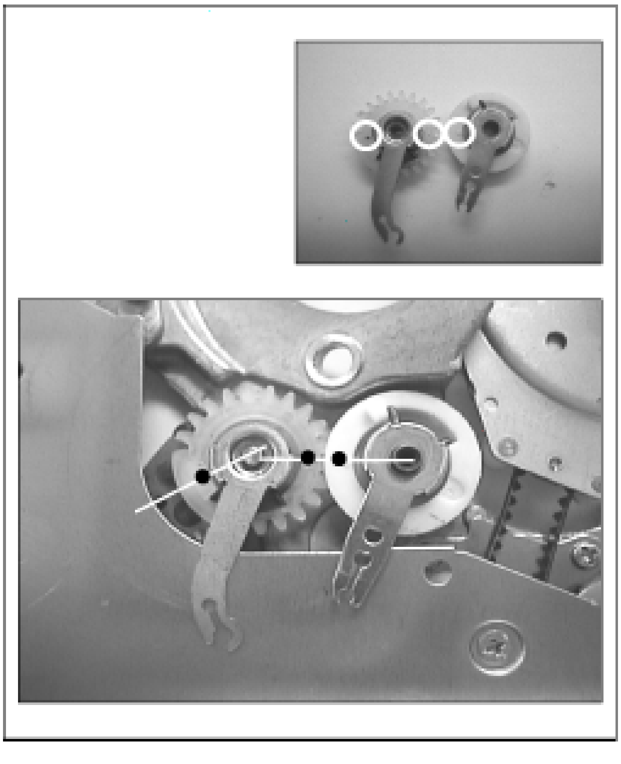


Fig. A15-1

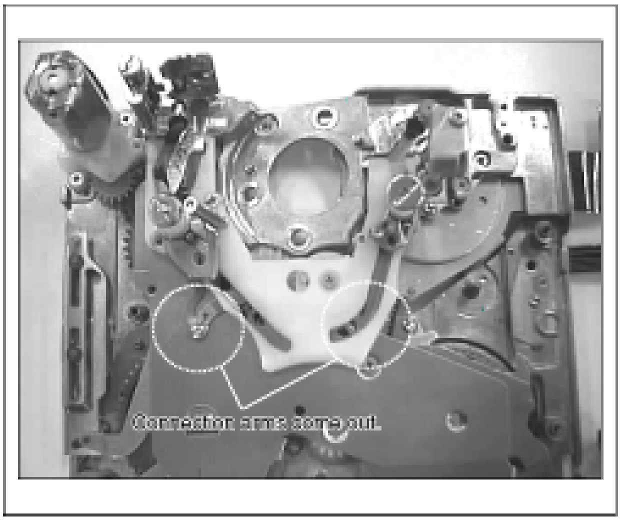

Connection arms come out.

Fig. A15-2

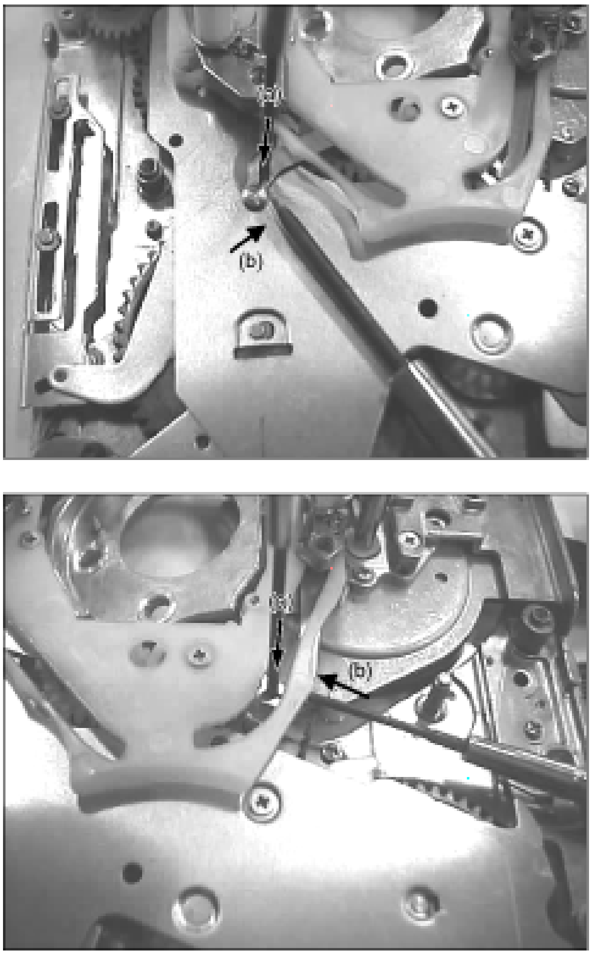

a) Hold Loading Gear side.
b) Push Arm of S & Tloading Gear into slit of connection arms.

Fig. A15-3

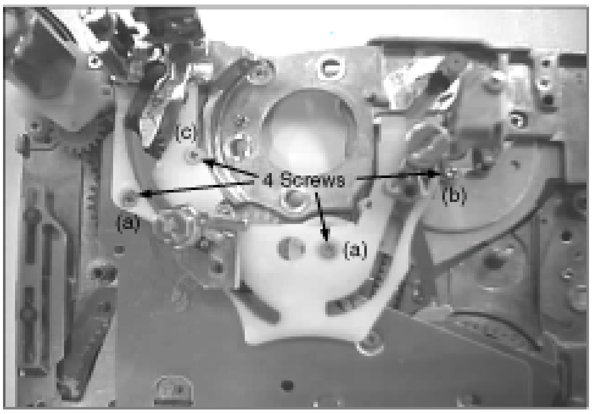


Fig. A16-1

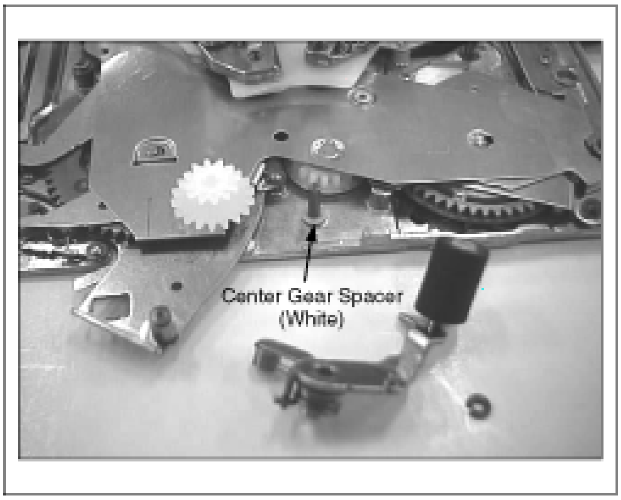

Center Gear Spacer
(White)

Fig. A16-2

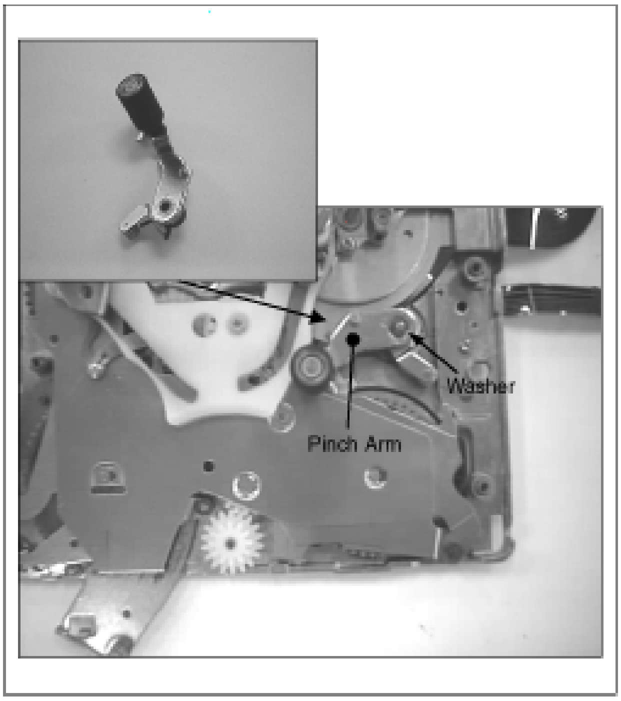

Washer
Pinch Arm

Fig. A17-1

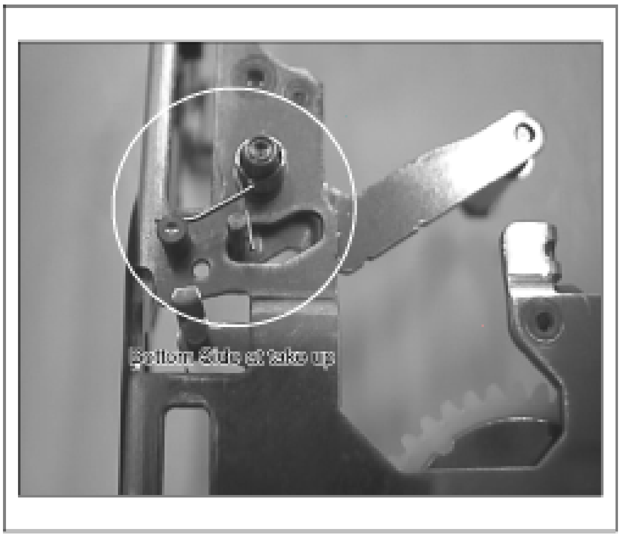

Bottom Side at take up

Fig. A17-2

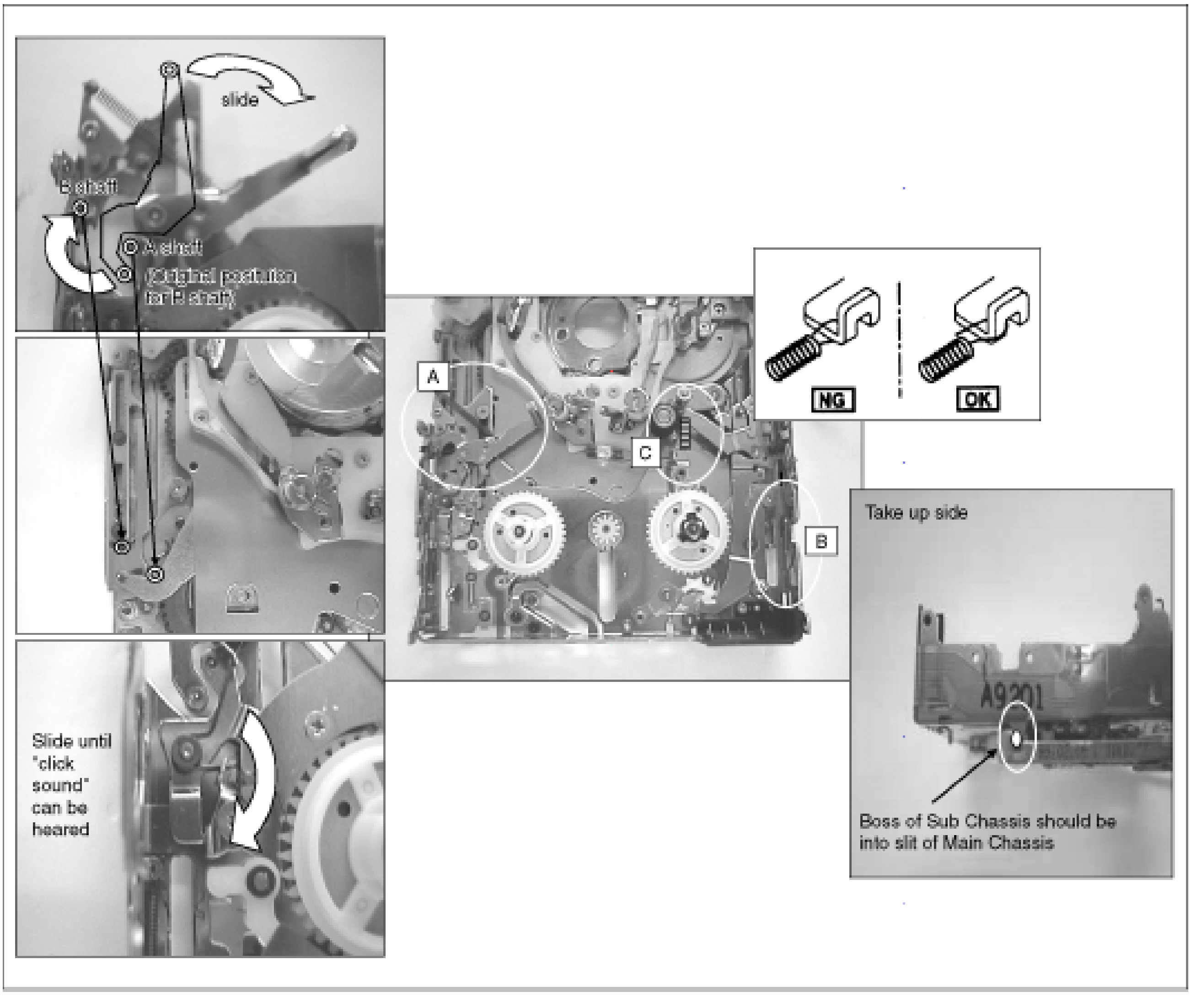

slide
B shaft
A shaft
(Original position for B shaft)
Slide until "click sound" can be heared
A
C
B
NG
OK
Take up side
A9201
Boss of Sub Chassis should be into slit of Main Chassis

Fig. A17-3

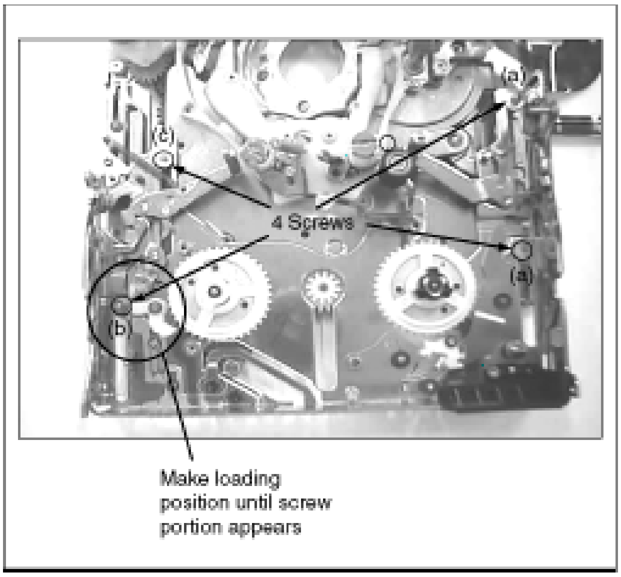

(a)
(c)
4 Screws
(a)
(b)
Make loading
position until screw
portion appears

Fig. A17-4

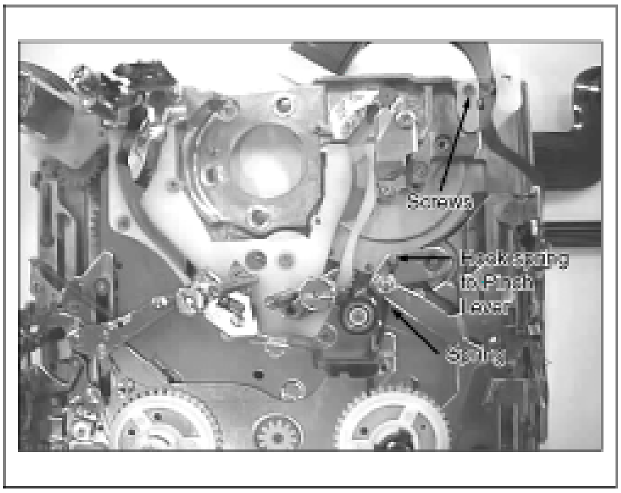

Screws
Hook spring
to Pinch
Lever
Spring

Fig. A18-1

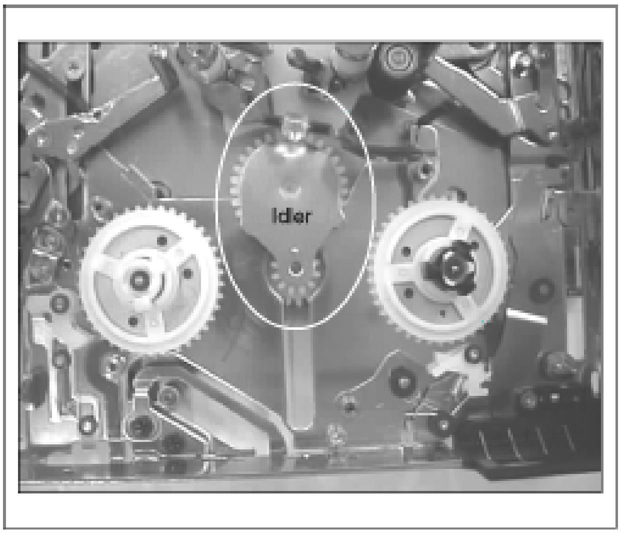


Fig. A18-2

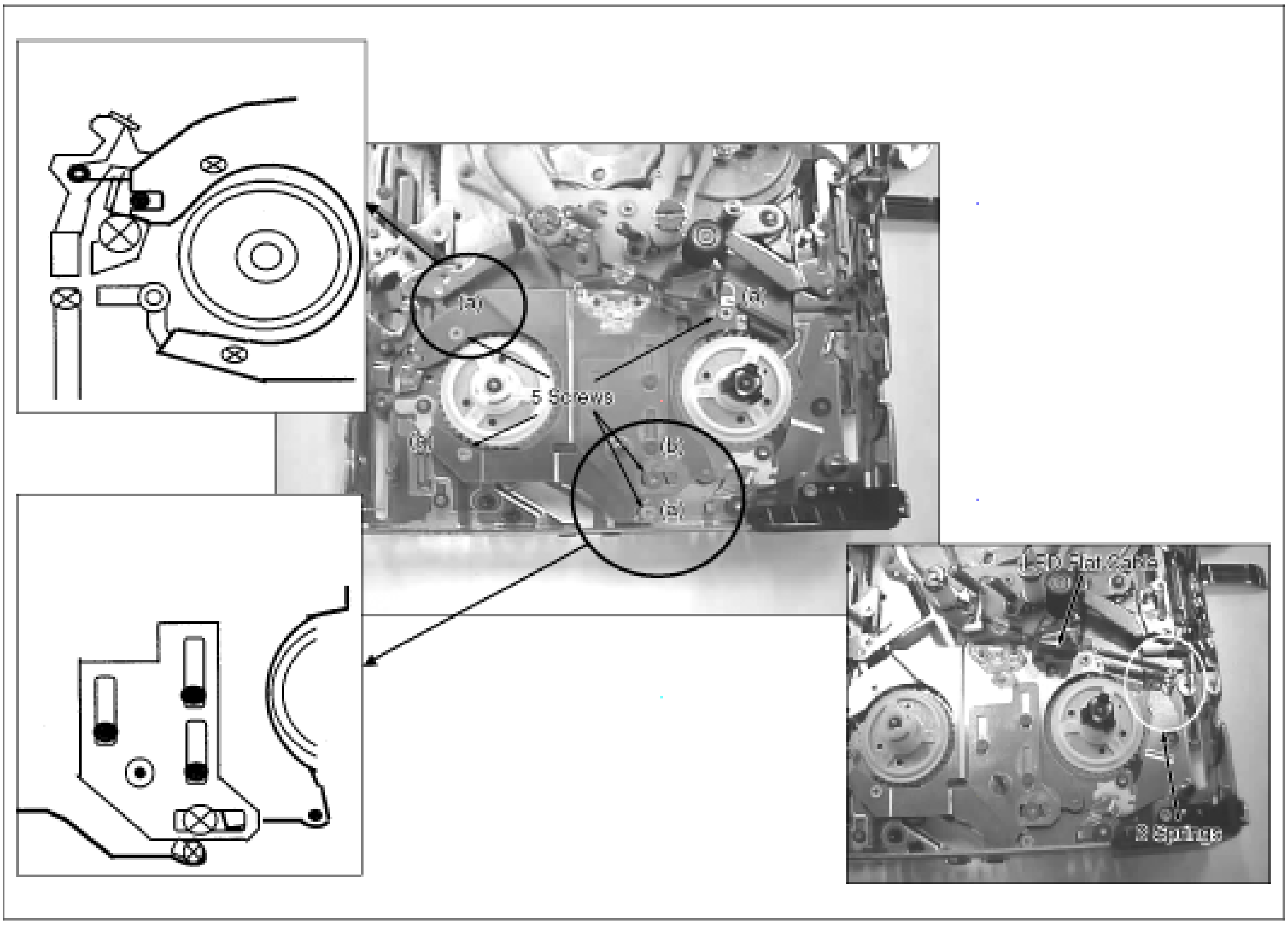

(a)
(a)
5 Screws
(a)
(b)
(a)
LED Flat Cable
2 Springs

Fig. A18-3

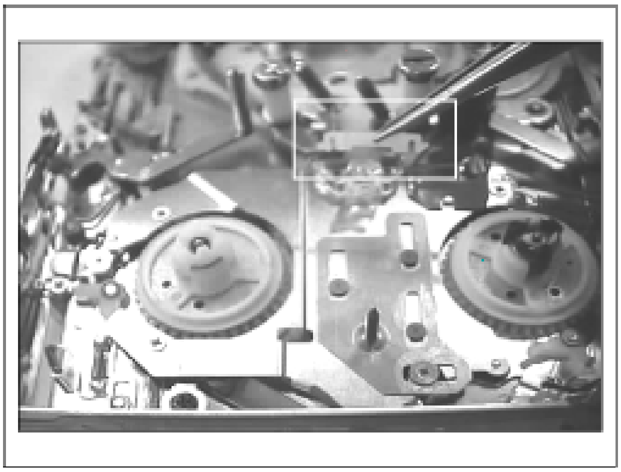


Fig. A19-1

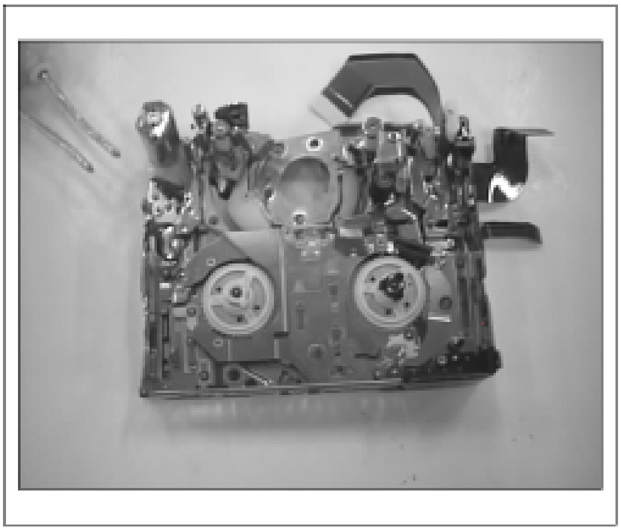


Fig. A19-2

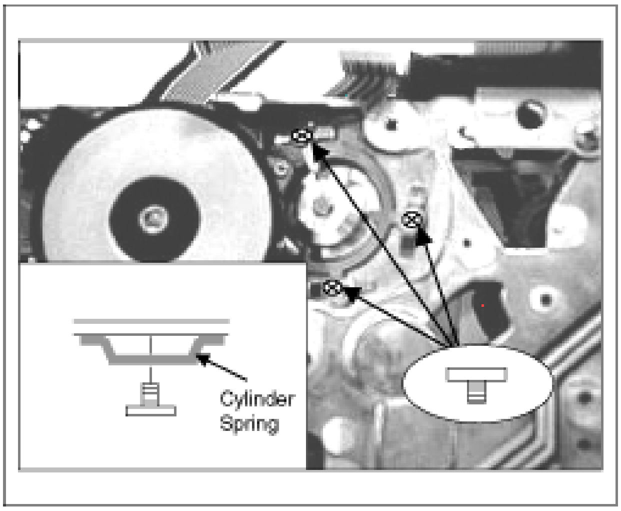


FIg. A19-3

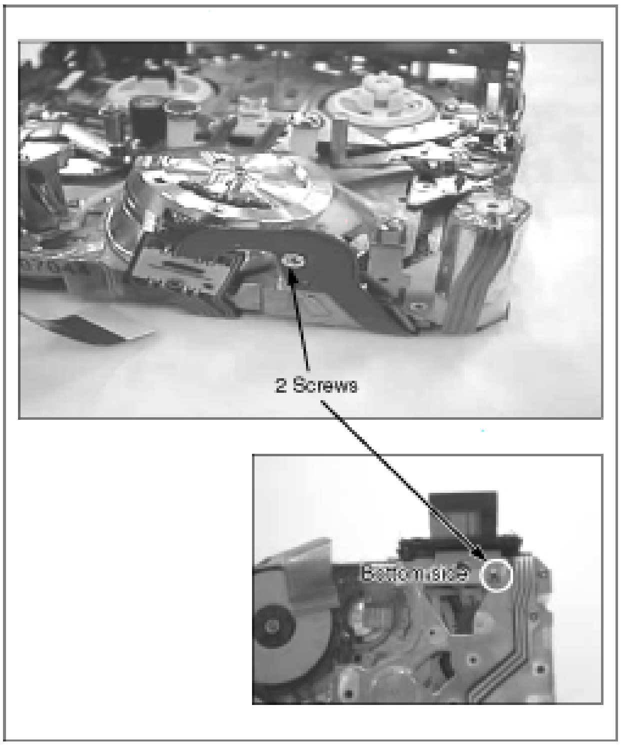


Fig. A20-1

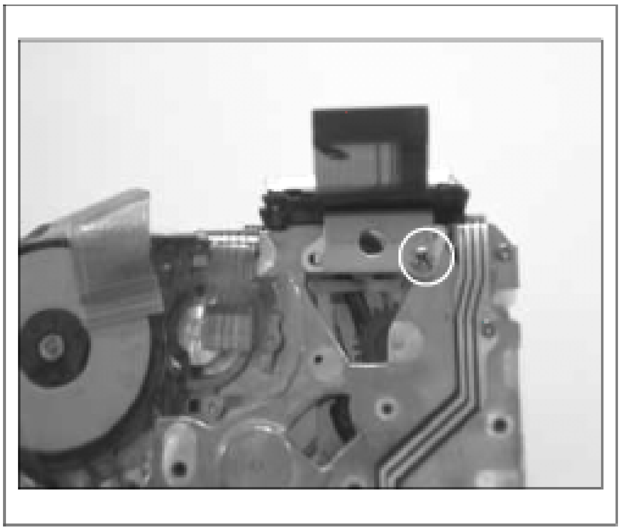


Fig. A20-2

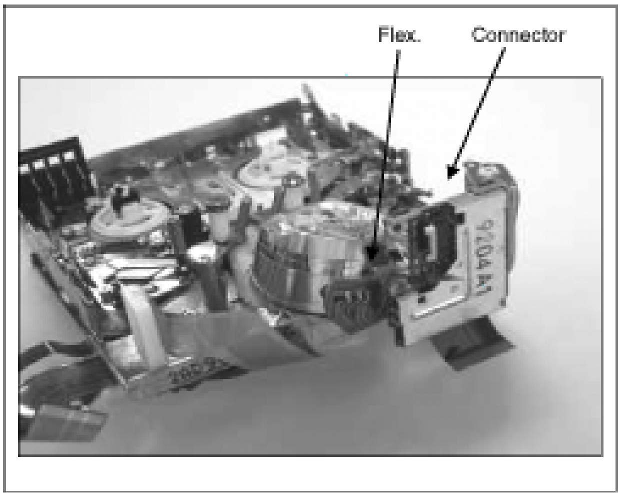

Flex.
Connector

Fig. A20-3

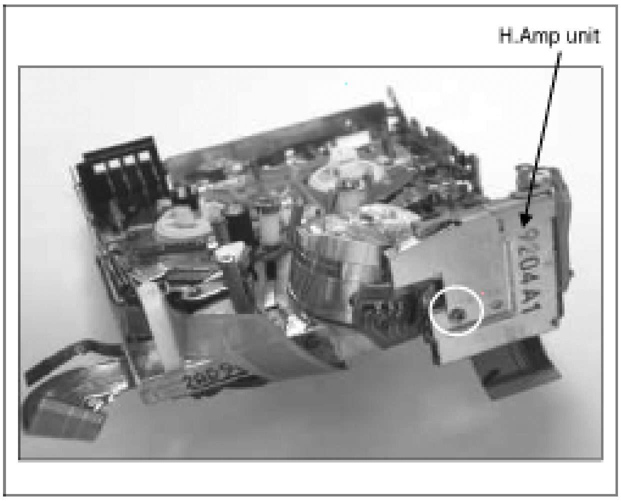


Fig. A21-1

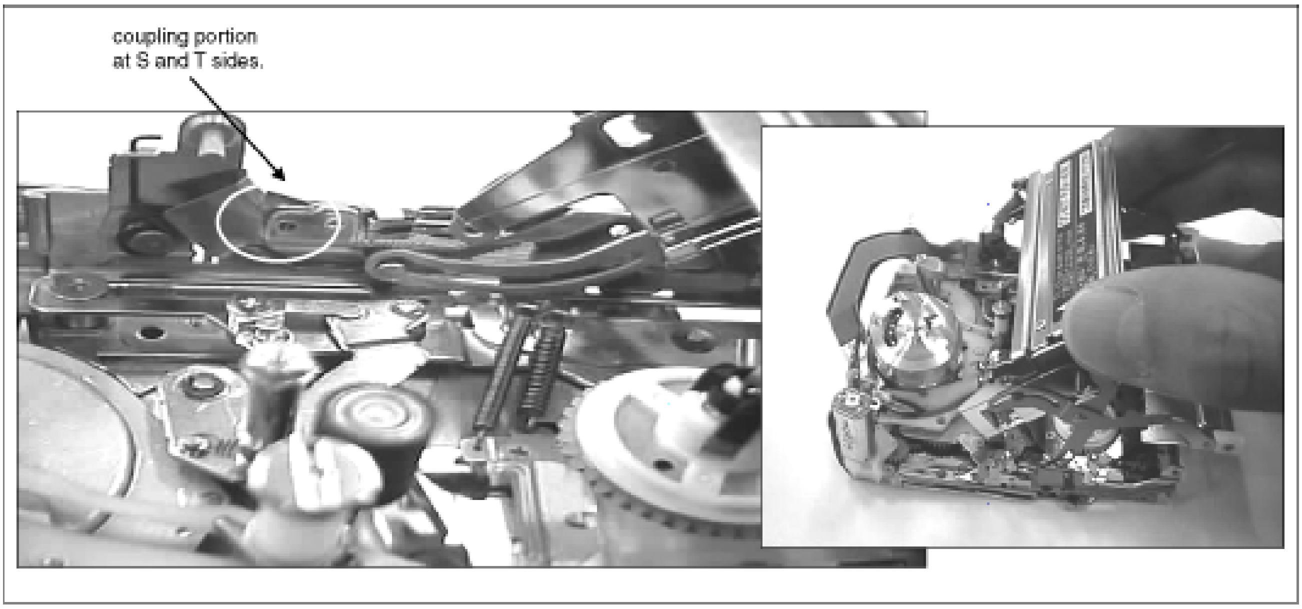
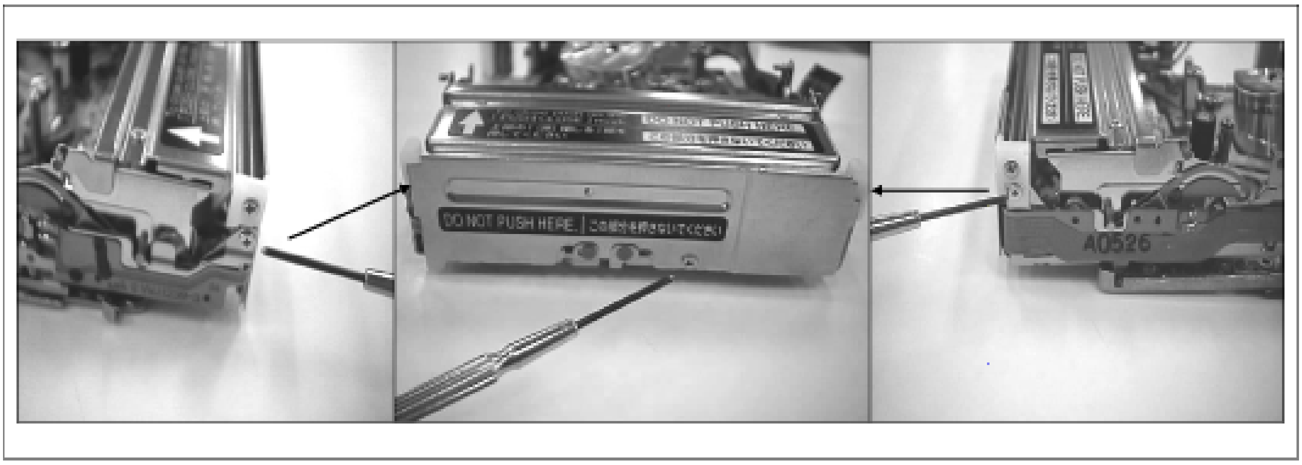

coupling portion
at S and T sides.

Fig. A21-2


DO NOT PUSH HERE.
この部分を押さないでください
A0526

TOP PREVIOUS NEXT

5.1 MECHANICAL ADJUST TABLE

TOP PREVIOUS NEXT

* 1) H.Amp Unit is applied only Q1 & Q2 mechanism.

No.	Item	Confirmation of Tape Running	Linearity Adjustment	Confirmation of B.E.R. Value	Capstan tilt Adjustment	S3 Base adjustment	Sub Chassis Adjustment
1	MECHANISM CHASSIS	--	--	•	--	--	--
2	Cassette Up Unit.	--	--	--	--	--	--
*3	H Amp Unit.	--	--	•	--	--	--
4	Cylinder Unit	•	•	•	--	--	--
5	RT Flex. Flame.	--	--	--	--	--	--
6	LED Holder	--	--	--	--	--	--
7	Cover Plate	--	--	--	--	--	--
8	Idler U.	--	--	•	--	--	--
9	Sub Chassis Unit	•	•	•	--	--	•
10	Pinch Arm	•	•	•	--	--	--
11	Center Gear	--	--	•	--	--	--
12	Rail Unit	•	•	•	--	--	--
13	S-Loading Gear	--	--	•	--	--	--
14	T-Loading Gear	--	--	•	--	--	--
15	Gear Cover	--	--	•	--	--	--
16	Pinch Beetle	--	--	•	--	--	--
17	Release Beetle	--	--	•	--	--	--
18	Tension Lever	•	•	•	--	--	--
19	Eject Arm	--	--	--	--	--	--
20	Interface Gears	--	--	•	--	--	--
21	Cam Gear	--	--	•	--	--	--
22	Chassis Radon	--	--	--	--	--	--
23	Boat Radon	--	--	--	--	--	--
24	Drive Gear	--	--	•	--	--	--
25	Capstan Holder	--	--	--	--	--	--
26	Capstan Motor	•	•	•	•	--	--
27	Loading Motor Unit	--	--	--	--	--	--

28	Mechanism Interface Flex.	--	--	--	--	--	--
29	Mode Switch	--	--	--	--	--	--
30	Deceleration Gears	--	--	•	--	--	--
31	Tension Plate	•	•	•	--	--	--
32	T4 Guide	--	--	--	--	--	--
33	Eject Lever	--	--	--	--	--	--
34	Pulley Cover	--	--	--	--	--	--
35	Pulley	--	--	--	--	--	--
36	S3 Base U.	•	•	•	--	•	--

TOP PREVIOUS NEXT

5.2 MECHANICAL ADJUSTMENT PROCEDURE

TOP PREVIOUS NEXT

No.	Item	Equipment	Fig.	Procedure
1	Confirmation of Tape Running	1. Alignment Tape (PAL: VFM3110EDS/NTSC: VFM3010EDS) 2. Post Adjustment Driver(VFK1278)	Fig. AD1-1	1) Confirm each post position in playback mode.
			Fig. AD1-2	2) Confirm condition of tape regulation in playback & review mode.
2	Linearity Adjustment	1.Tatsujin system(Refer to Fig.)	Fig. AD2-1	1) Set up Tatsujin System.
		2. Alignment Tape (PAL: VFM3110EDS/NTSC: VFM3010EDS) 3. Envelope Detecor Board (VFK1641) 4. Post Adjustment Driver (VFK1278)	Fig. AD2-2	2) Connect Envelope Detector Board between Measuring Board & Oscilloscope.
			--	3) Remove Adjustment Cover. * Location for Adjustment Cover depends on Models.
			Fig. AD2-3	4) Playback the Alignment Tape and adjust S2 & T3 posts by Screw Driver until wavefom becomes flat. After adjustment, B.E.R. should be confirmed by Electrial adjustment on the "Tatsujin".
3	Confirmation of B.E.R. Value	1.Tatsujin system(Refer to Fig.)	Fig. AD2-1	1) Refer to Electrical Adjustment on the "Tatsujin".
4	Capstan tilt Adjustment	1. Capstan Tilt Adj. Jig(VFK1638) 2. Small Phillips Screw Driver	Fig. AD4-1	1) Slide sensor pin to Capstan shaft. After touching,if OK, LED should be lit. * Do not touch when you confirm LED lit or not.
			Fig. AD4-2	2) If Ng, Capstan tilt should be adjusted. a) Tighten screw (A) until LED is lit. b) Loose screw (B) until LED is not lit. c)Tightenscrew (A) unti-clockwise until LED is lit .
5	S3 Base adjustment	1. Post Adjustment Driver(VFK1278)	Fig. AD5-1	1) Adjust S3 screw as Evvelope becomes flat.
			Fig. AD5-2	2) Tighten a screw 180 degree as "ENV 1". 3) Loosen a screw as ENV 2. 4) Tighten a screw until ENV becomes flat as ENV 3 and tighten a screw 180 degree again.
6	Sub Chassis Adjustment	1. Small Phillips Screw Driver	Fig. AD6-1	1) Make Review Position. * Set Loading mode and then,stop Pinch Roller & Capstan shaft is touched.

				Fig. AD6-2	2) Loosen a screw. After fixing a shaky Sub Chassis,then tighten a screw.

Fig. AD1-1

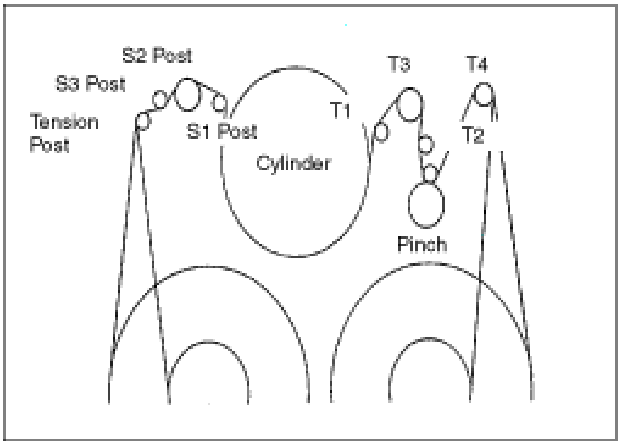

S2 Post
S3 Post
Tension Post
S1 Post
Cylinder
T3
T4
T1
T2
Pinch

Fig. AD1-2

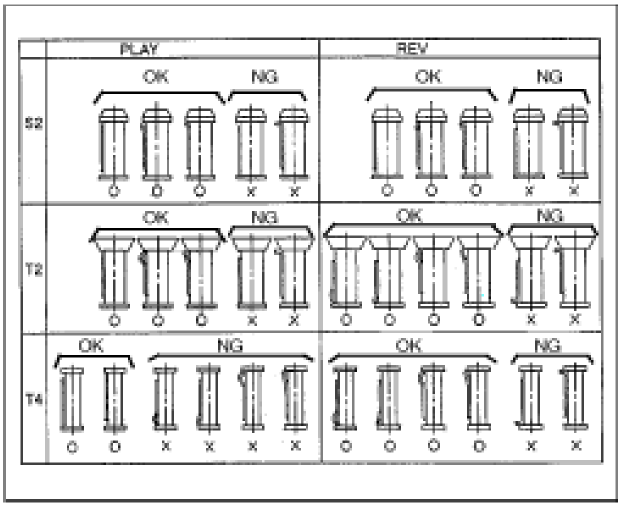

PLAY
REV
S2
T2
T4
OK
NG
O
X

Fig. AD2-1

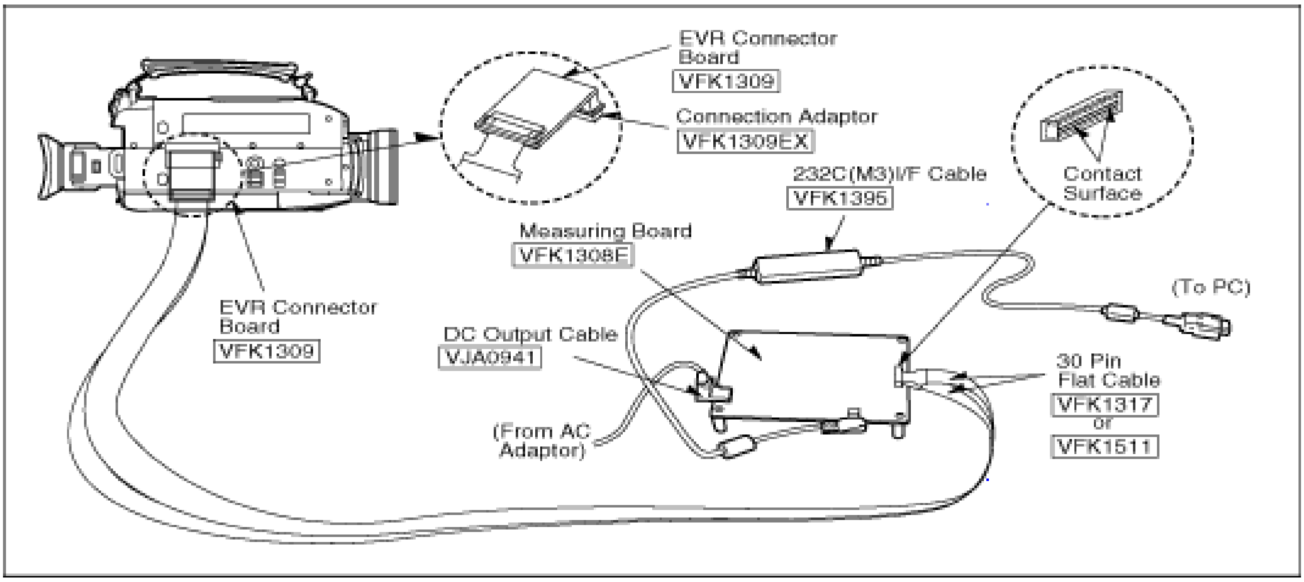

EVR Connector Board
VFK1309
Connection Adaptor
VFK1309EX
232C(M3)I/F Cable
VFK1395
Contact Surface
Measuring Board
VFK1308E
(To PC)
EVR Connector Board
VFK1309
DC Output Cable
VJA0941
30 Pin Flat Cable
VFK1317
or
VFK1511
(From AC Adaptor)

Fig. AD2-2

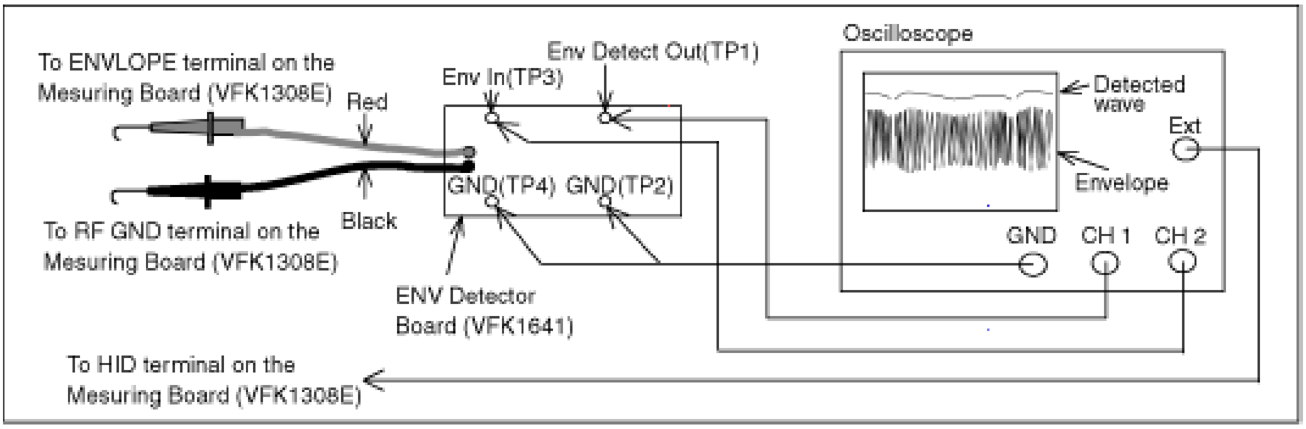

To ENVLOPE terminal on the Mesuring Board (VFK1308E)
Red
To RF GND terminal on the Mesuring Board (VFK1308E)
Black
Env In(TP3)
Env Detect Out(TP1)
GND(TP4)
GND(TP2)
ENV Detector Board (VFK1641)
Oscilloscope
Detected wave
Envelope
Ext
GND
CH 1
CH 2
To HID terminal on the Mesuring Board (VFK1308E)

Fig. AD2-3

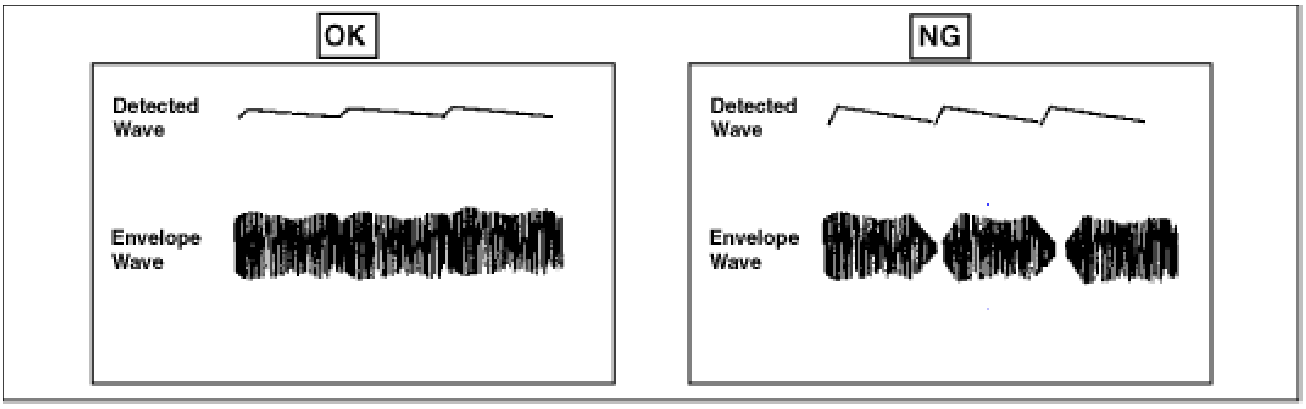

OK
Detected Wave
Envelope Wave
NG
Detected Wave
Envelope Wave

Fig. AD4-1

Fig. AD4-2

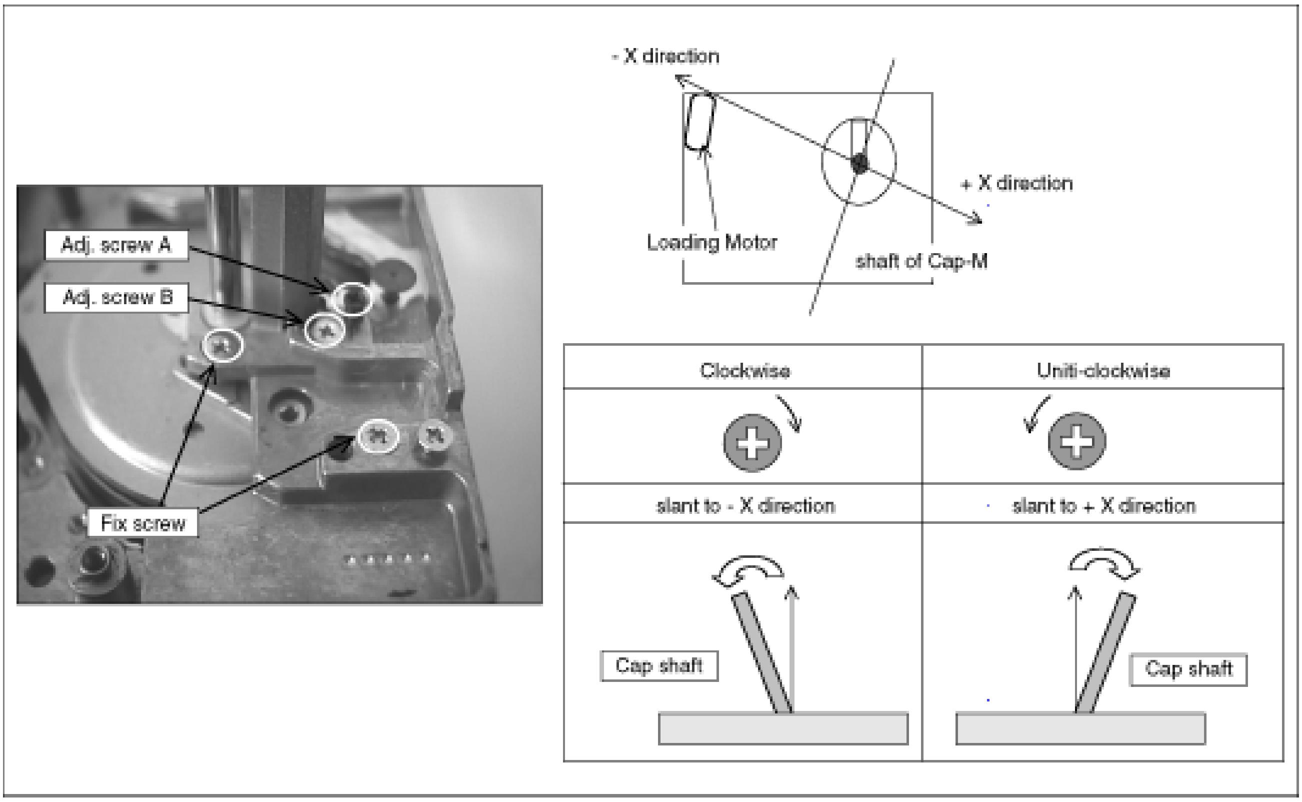

Adj. screw A
Adj. screw B
Fix screw
- X direction
+ X direction
Loading Motor
shaft of Cap-M
Clockwise
Uniti-clockwise
slant to - X direction
slant to + X direction
Cap shaft
Cap shaft

Fig. AD5-1

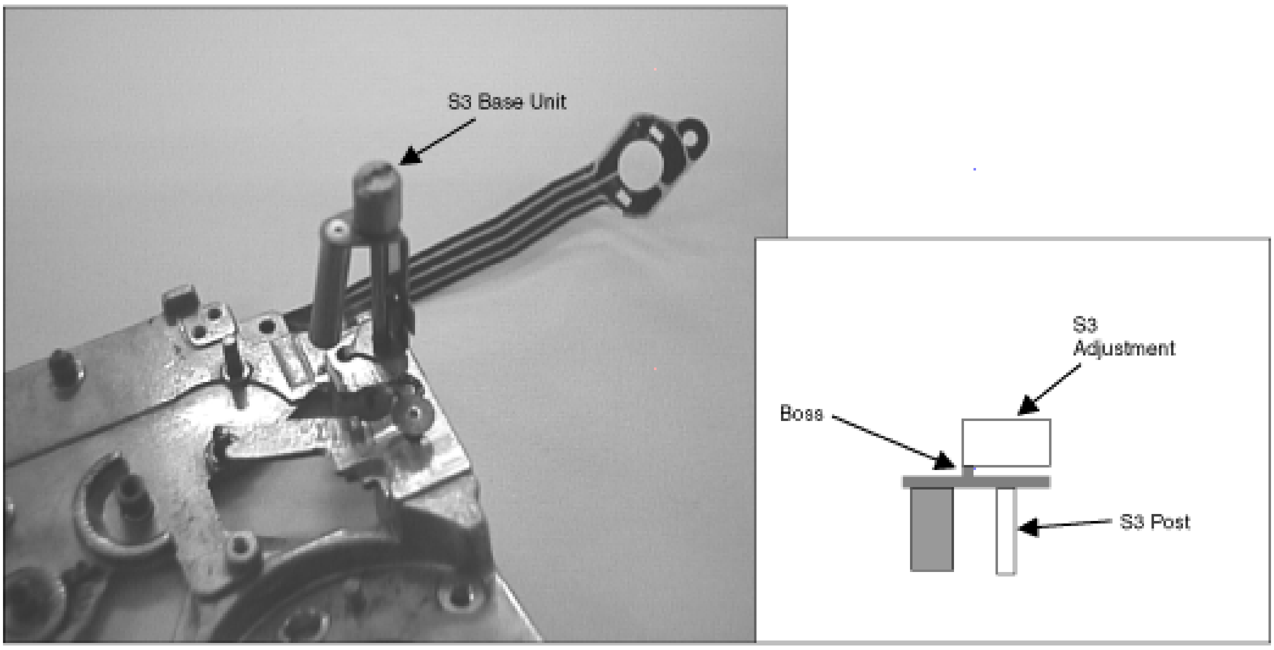

S3 Base Unit
S3
Adjustment
Boss
S3 Post

Fig. AD5-2

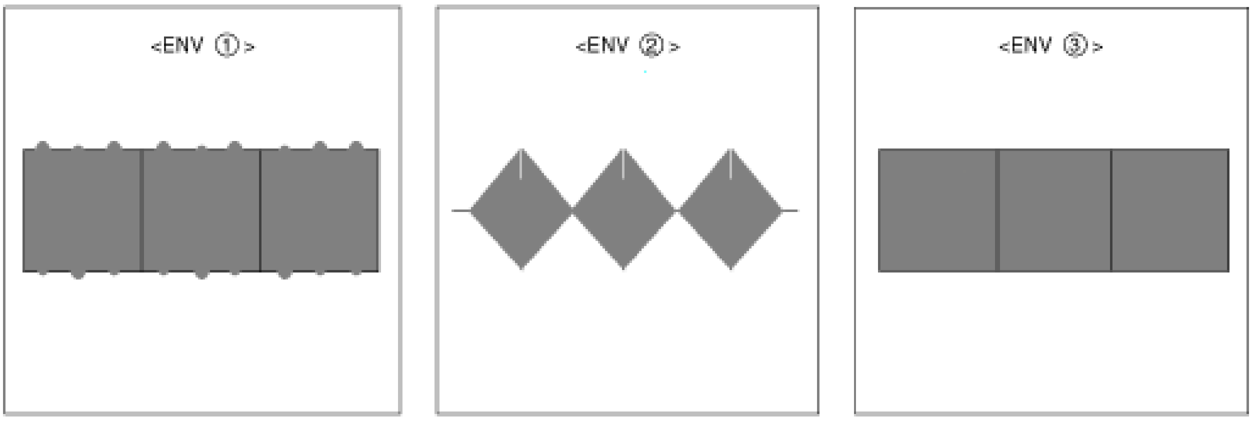


Fig. AD6-1

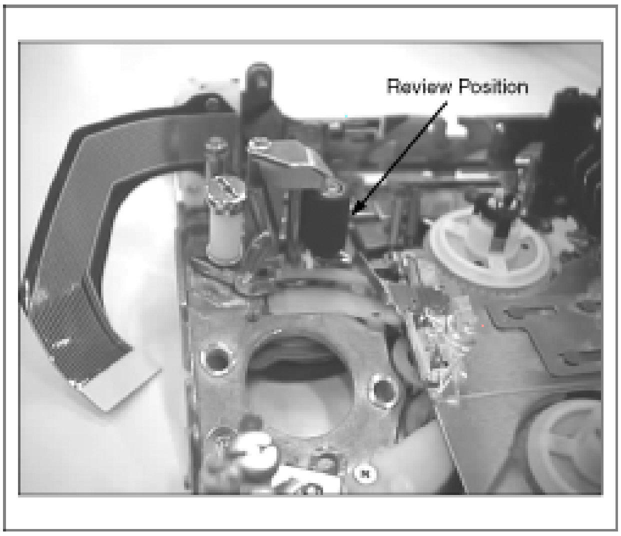
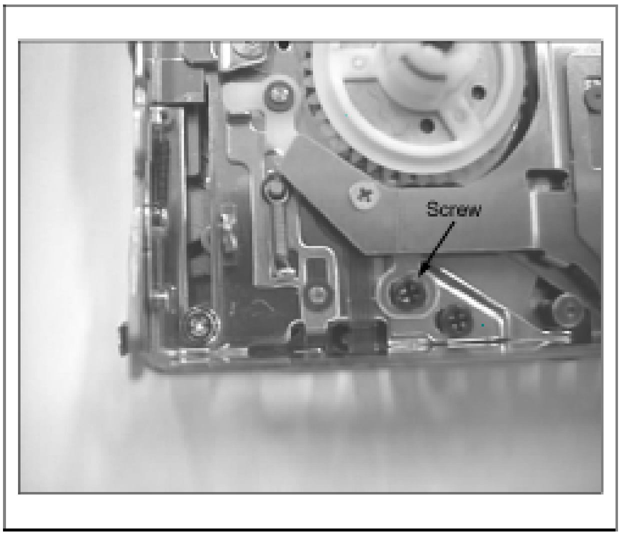


Fig. AD6-2



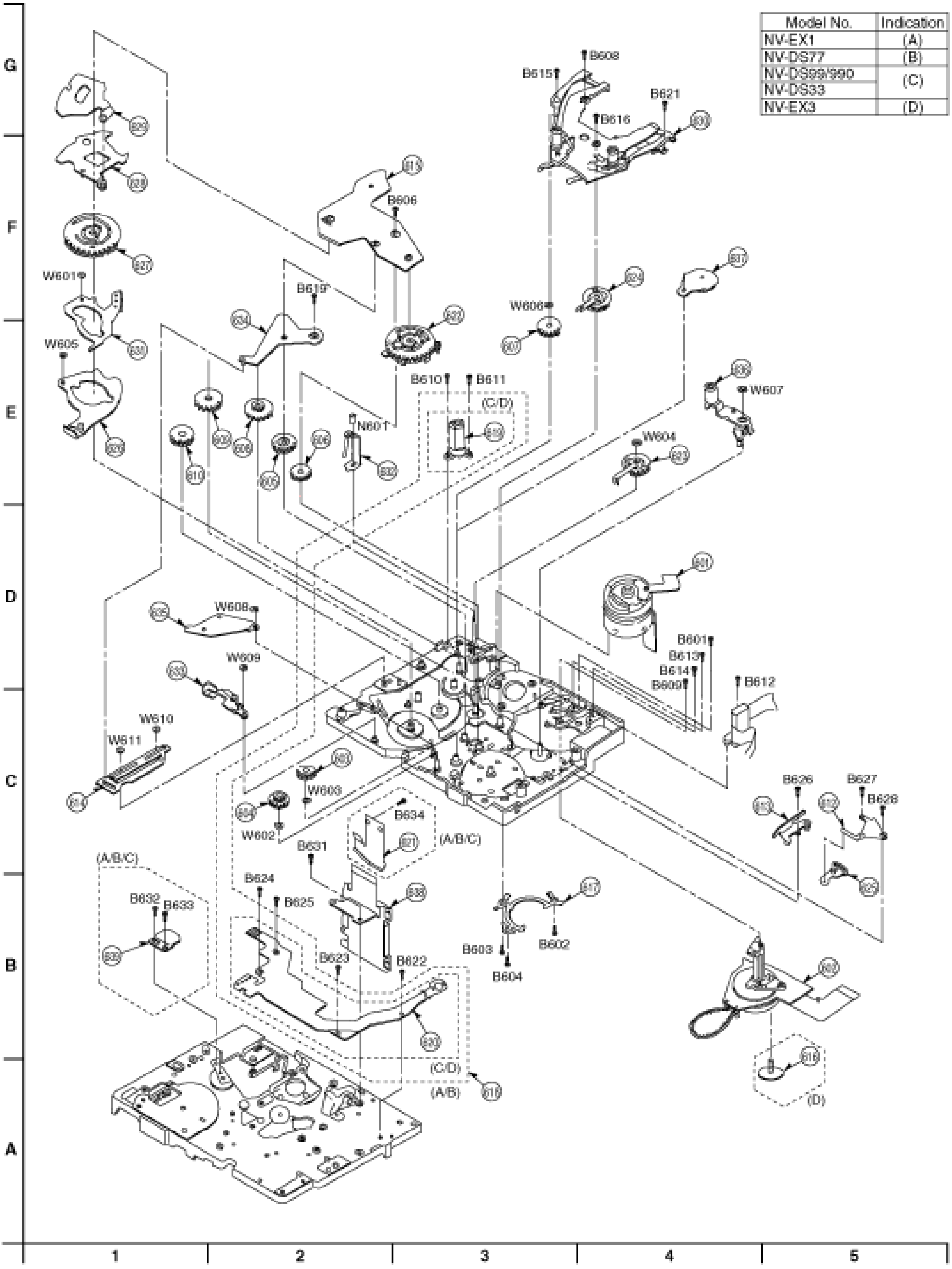
TOP PREVIOUS NEXT

6.1 Q1& Q2 VCR MECHANISM SECTON (1)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

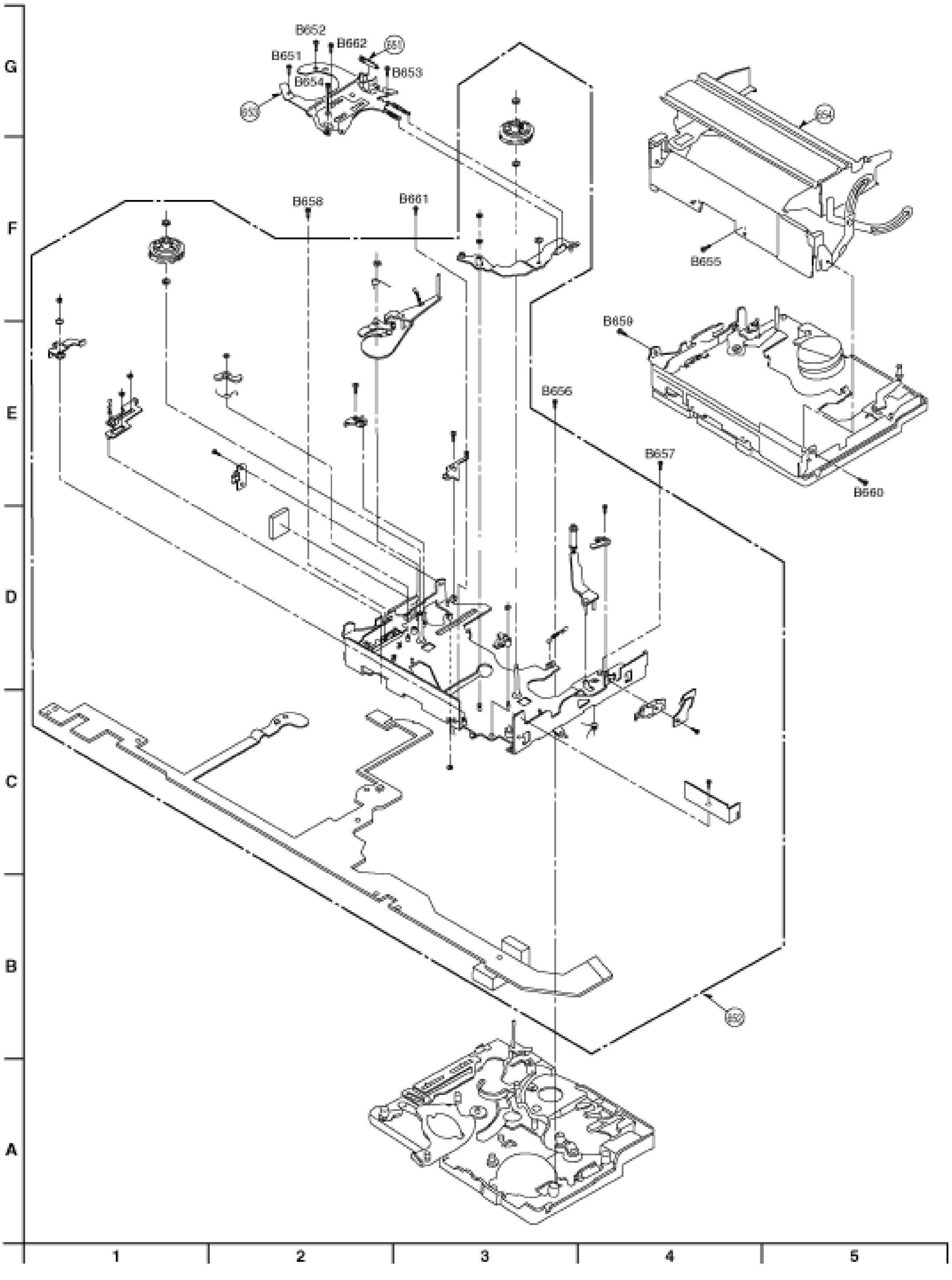
Model No.	Indication
NV-EX1	(A)
NV-DS77	(B)
NV-DS99/990 NV-DS33	(C)
NV-EX3	(D)


G
F
E
D
C
B
A
1
2
3
4
5
B608
B615
B621
B616
B606
W601
B619
W606
W605
B610
B611
(C/D)
W607
N601
W604
W608
B601
B613
W609
B614
B609
B612
W610
W611
W603
B626
B627
B628
B634
W602
(A/B/C)
B631
(A/B/C)
B624
B632
B633
B625
B603
B602
B604
B623
B622
(C/D)
(A/B)
(D)

6.2 Q1& Q2 VCR MECHANISM SECTION (2)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT


G
F
E
D
C
B
A
B652
B662
B651
B653
B654
B658
B661
B655
B659
B656
B657
B660
1
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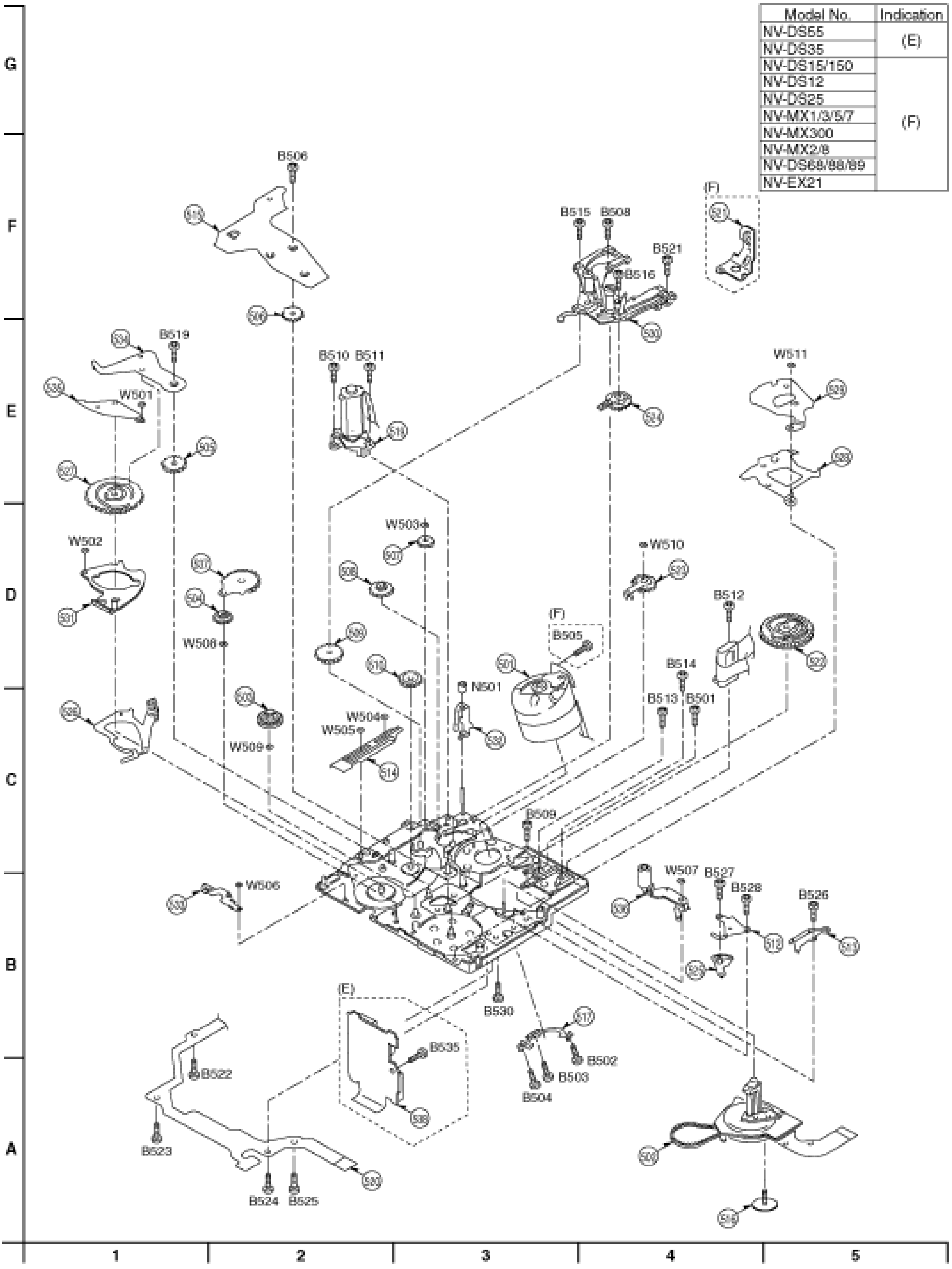
5

6.3 Q3 VCR MECHANISM SECTION (1)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT



Model No.	Indication
NV-DS55	(E)
NV-DS35	
NV-DS15/150	(F)
NV-DS12	
NV-DS25	
NV-MX1/3/5/7	
NV-MX300	
NV-MX2/8	
NV-DS68/88/89	
NV-EX21	

G
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E
D
C
B
A
1
2
3
4
5
B506
(F)
B515
B508
B521
B516
B519
W501
B510
B511
W511
W503
W502
W510
B512
(F)
B505
N501
B514
B513
B501
W508
W504
W505
W509
B509
W506
W507
B527
B528
B526
(E)
B530
B535
B502
B503
B504
B522
B523
B524
B525

6.4 Q3 VCR MECHANISM SECTION (2)

TOP PREVIOUS NEXT

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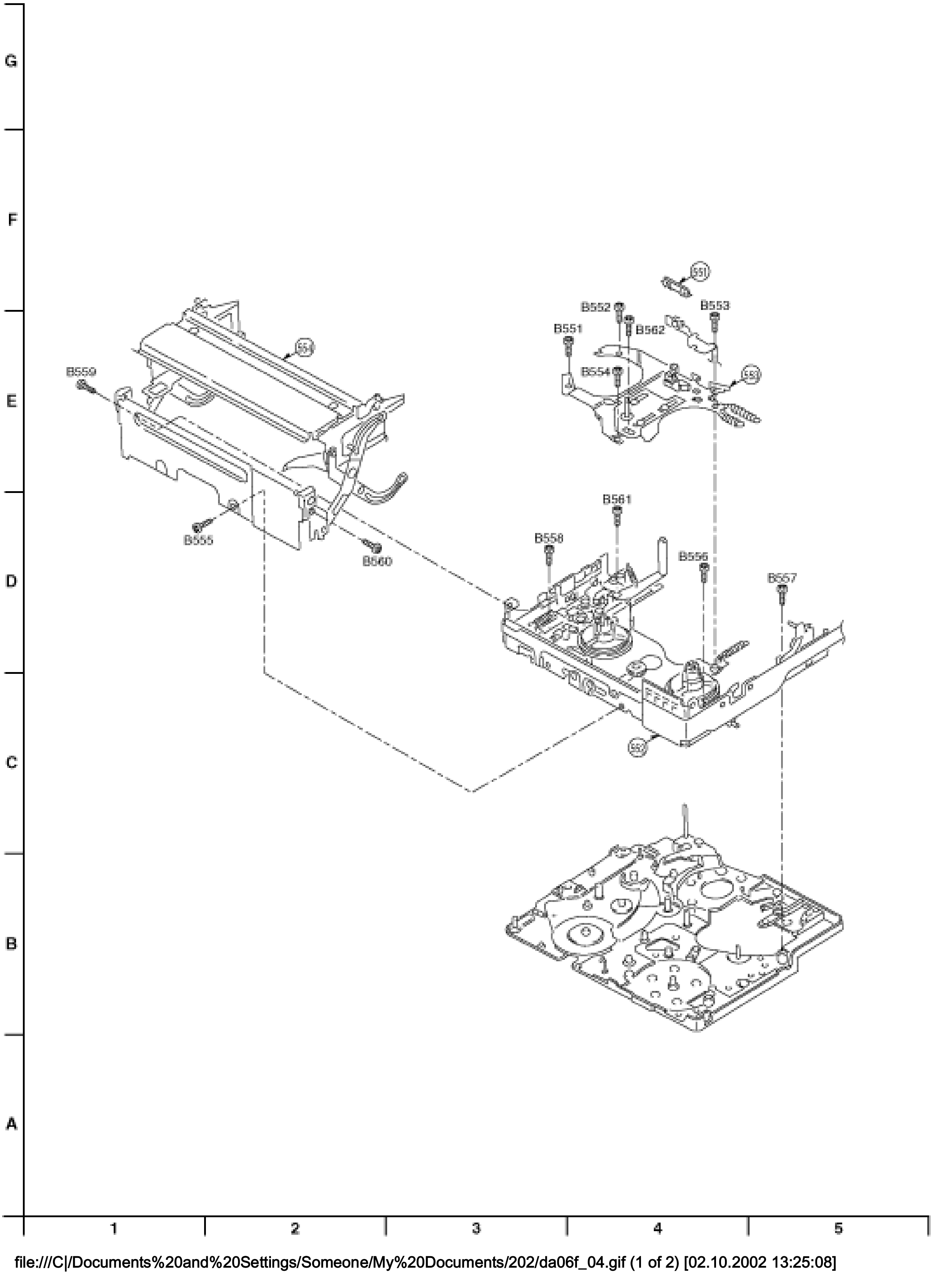
G
F
E
D
C
B
A
1
2
3
4
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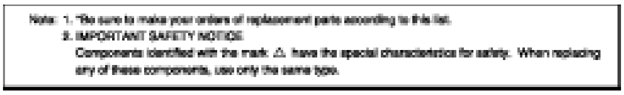
551
B552
B553
B551
B562
B554
553
554
B559
B555
B560
B561
B558
B556
B557
552

7.1 Q1& Q2 VCR MECHANISM SECTION (1) PARTS LIST

TOP PREVIOUS NEXT



Note: 1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
601	VEG1495	CYLINDER U.	
602	DFX25A7VWB	CAPSTAN U.	
603	VDG1284	DRIVE GEAR	
604	VDG1285	CENTER GEAR	
605	VDG1290	INTERFACE GEAR (C)	
606	VDG1291	INTERFACE GEAR (D)	
607	VDG1295	DECELERATION (A)	NV-EX1,NV-DS77
607	VDG1330	DECELERATION (A)	NV-DS99/990,NV-DS33,NV-EX3
608	VDG1296	DECELERATION (B)	NV-EX1,NV-DS77
608	VDG1331	DECELERATION (B)	NV-DS99/990,NV-DS33,NV-EX3
609	VDG1297	INTERFACE GEAR (A)	
610	VDG1303-A	INTERFACE GEAR (B)	
612	VMA9908	PULLEY COVER	
613	VMA9916	T4 GUIDE	
614	VMA9917	TENSION PLATE	
615	VMA0E52	GEAR COVER	
616	VHD1430	CAPSTAN HOLDER	NV-EX3
617	VMC1443	CYLINDER SPRING	
618	L6DA8DKC0001	LOADING MOTOR U.	NV-EX1,NV-DS77
619	VEM0679	LOADING MOTOR U.	NV-DS99/990,NV-DS33,NV-EX3
620	VWJ1297	MECHANISM INTERFACE FLEX.	NV-DS99/990,NV-DS33,NV-EX3
622	K0ZZ00000453	MODE SWITCH	
623	VXA6124	S LOAD GEAR U.	
624	VXA6125	T LOAD GEAR U.	

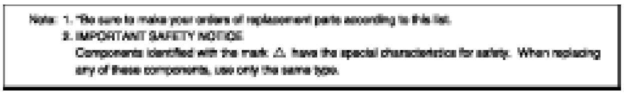
625	VXA6133	PULLEY COVER	
626	VXA6134	CHASSIS RADON U.	
627	VXA6135	CAM GEAR U.	
628	VXA6136	PINCH BEETLE	
629	VXA6137	RELEASE BEETLE	
630	VXA6138	RAIL U.	
631	VXA6169	BOAT RADON U.	
632	VXA6184	S3 BASE U.	
633	VXL2814	EJECT LEVER U.	
634	VXL2815	TENSION LEVER U.	
635	VXL2816	EJECT ARM U.	
636	VXL2897	PINCH ARM U.	
637	VXL2818	IDLER U.	
638	VYK8485	HEAD AMP U.	NV-EX1
638	VYK8244	HEAD AMP U.	NV-DS77
638	VYK8886	HEAD AMP U.	NV-DS99/990,NV-DS33
638	VYK9102	HEAD AMP U.	NV-EX3
621	VSC4802	SHIELD CASE	NV-EX1
621	VSC4758	SHIELD CASE	NV-DS77,NV-DS99/990,NV-DS33
639	VMA9926	CAPSTAN HOLDER	NV-EX1,NV-DS77,NV-DS99/990,NV-DS33
B601	VHD1155	SCREW	
B602	VHD1372	SCREW	
B603	VHD1372	SCREW	
B604	VHD1372	SCREW	
B606	VHD1160	SCREW	
B608	VHD1160	SCREW	
B609	VHD1406	SCREW	
B610	VHD1161	SCREW	
B611	VHD1161	SCREW	
B612	VHD1161	SCREW	
B613	VHD1161	SCREW	
B614	VHD1161	SCREW	

B615	VHD1162	SCREW	
B616	VHD1162	SCREW	
B619	VHD1163	SCREW	
B621	XQN12+B1	SCREW	
B622	XQN12+A1	SCREW	
B623	XQN12+A1	SCREW	
B624	XQN12+A1	SCREW	
B625	XQN12+A1	SCREW	
B626	XQN12+A1	SCREW	
B627	XQN12+A12FN	SCREW	
B628	XQN12+A12FN	SCREW	
B631	XQN12+B2	SCREW	
B632	VHD1162	SCREW	NV-EX1,NV-DS77,NV-DS99/990,NV-DS33
B633	VHD1162	SCREW	NV-EX1,NV-DS77,NV-DS99/990,NV-DS33
B634	XQN16+B12	SCREW	NV-EX1,NV-DS77,NV-DS99/990,NV-DS33
N601	VHN0324	NUT	
W601	VMX2028	WASHER	
W602	VMX2751	WASHER	
W603	VMX2752	WASHER	
W604	VMX2392	WASHER	
W605	VMX2028	WASHER	
W606	VMX2028	WASHER	
W607	VMX2028	WASHER	
W608	VMX2028	WASHER	
W609	VMX2028	WASHER	
W610	VMX2028	WASHER	
W611	VMX2028	WASHER	

TOP PREVIOUS NEXT

7.2 Q1& Q2 VCR MECHANISM SECTION (2) PARTS LIST

TOP PREVIOUS NEXT



Note: 1. "Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
651	VMD2975	LED HOLDER	
652	VXA6537	SUB SHASSIS U.	NV-DS99/990,NV-DS33,NV-EX3
652	VXA6146	SUB SHASSIS U.	NV-EX1,NV-DS77
653	VXA6151	COVER PLATE U.	
654	VXA6159	CASSETTE UP U.	
B651	VHD1162	SCREW	
B652	VHD1162	SCREW	
B653	VHD1162	SCREW	
B654	VHD1162	SCREW	
B655	VHD1207	SCREW	
B656	VHD1164	SCREW	
B657	VHD1164	SCREW	
B658	VHD1171	SCREW	
B659	VHD1314	SCREW	
B660	VHD1314	SCREW	
B661	VHD1163	SCREW	
B662	VHD1163	SCREW	

TOP PREVIOUS NEXT

7.3 Q3 VCR MECHANISM SECTION (1) PARTS LIST

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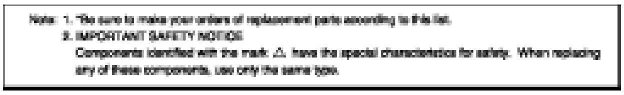

Note: 1. "Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
501	VEG1570	CYLINDER U.	NV-EX21,NV-DS68/88/89/25/12/15/150,NV-MX2/8/300/1/3/5/7
501	VEG1495	CYLINDER U.	NV-DS35/55
502	DFX25A7VWC	CAPSTAN U.	NV-EX21,NV-DS68/88/89/25/12/15/150,NV-MX2/8/300/1/3/5/7
502	DFX25A7VWB	CAPSTAN U.	NV-DS35/55
503	VDG1284	DRIVE GEAR	
504	VDG1285	CENTER GEAR	
505	VDG1290	INTERFACE GEAR (C)	
506	VDG1291	INTERFACE GEAR (D)	
507	VDG1330	DECELERATION GEAR (A)	
508	VDG1331	DECELERATION GEAR (B)	
509	VDG1297	INTERFACE GEAR (A)	
510	VDG1303	INTERFACE GEAR (B)	
512	VMA9908	PULLEY COVER	
513	VMA9916	T4 GUIDE	
514	VMA9917	TENSION PLATE	
515	VMA0E52	GEAR COVER	
516	VHD1430	CAPSTAN HOLDER	
517	VMC1443	CYLINDER SPRING	
519	VEM0679	LOADING MOTOR U.	
520	VWJ1297	MECHANISM INTERFACE FLEX.	
521	VMP6271	RT FLEX. FRAME	NV-EX21,NV-DS68/88/89/25/12/15/150,NV-MX2/8/300/1/3/5/7
522	K0ZZ00000453	MODE SWITCH	
523	VXA6124	S LOAD GEAR U.	
524	VXA6125	T LOAD GEAR U.	

525	VXA6133	PULLEY	
526	VXA6134	CHASSIS RADON U.	
527	VXA6135	CAM GEAR U.	
528	VXA6136	PINCH BEETLE	
529	VXA6137	RELEASE BEETLE	
530	VXA6138	RAIL U.	
531	VXA6169	BOAT RADON U.	
532	VXA6184	S3 BASE U.	
533	VXL2814	EJECT LEVER U.	
534	VXL2815	TENSION LEVER U.	
535	VXL2816	EJECT ARM U.	
536	VXL2897	PINCH ARM U.	
537	VXL2818	IDLER U.	
538	VYK8886	HEAD AMP U.	NV-DS35/55
B501	VHD1155	SCREW	
B502	VHD1372	SCREW	
B503	VHD1372	SCREW	
B504	VHD1372	SCREW	
B505	XQN14+B1FN	SCREW	NV-EX21,NV-DS68/88/89/25/12/15/150,NV-MX2/8/300/1/3/5/7
B506	VHD1160	SCREW	
B508	VHD1160	SCREW	
B509	VHD1406	SCREW	
B510	VHD1161	SCREW	
B511	VHD1161	SCREW	
B512	VHD1161	SCREW	
B513	VHD1161	SCREW	
B514	VHD1161	SCREW	
B515	VHD1162	SCREW	
B516	VHD1162	SCREW	
B519	VHD1163	SCREW	
B521	XQN12+B1	SCREW	
B522	XQN12+A1	SCREW	

B523	XQN12+A1	SCREW	
B524	XQN12+A1	SCREW	
B525	XQN12+A1	SCREW	
B526	XQN12+A1	SCREW	
B527	XQN12+A12FN	SCREW	
B528	XQN12+A12FN	SCREW	
B530	XQN16+B2	SCREW	
B535	XQN16+B3	SCREW	NV-DS35/55
N501	VHN0324	NUT	
W501	VMX2028	WASHER	
W502	VMX2028	WASHER	
W503	VMX2028	WASHER	
W504	VMX2028	WASHER	
W505	VMX2028	WASHER	
W506	VMX2028	WASHER	
W507	VMX2028	WASHER	
W508	VMX2751	WASHER	
W509	VMX2752	WASHER	
W510	VMX2392	WASHER	
W511	VMX2028	WASHER	

TOP PREVIOUS NEXT

7.4 Q3 VCR MECHANISM SECTION (2) PARTS LIST

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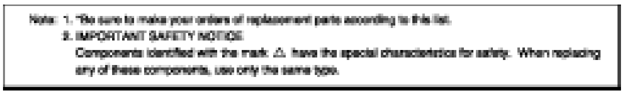

Note: 1. "Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
551	VMD2975	LED HOLDER	
552	VXA6537	SUB CHASSIS U.	
553	VXA6151	COVER PLATE U.	
554	VXA6159	CASSETTE UP U.	
B551	VHD1162	SCREW	
B552	VHD1162	SCREW	
B553	VHD1162	SCREW	
B554	VHD1162	SCREW	
B555	VHD1207	SCREW	
B556	VHD1164	SCREW	
B557	VHD1164	SCREW	
B558	VHD1171	SCREW	
B559	VHD1314	SCREW	
B560	VHD1314	SCREW	
B561	VHD1163	SCREW	
B562	VHD1163	SCREW	

TOP PREVIOUS